

PW7 Pick-Up Header

OPERATOR'S MANUAL

Part #169149 Rev. E

\$15

INTRODUCTION

In order to ensure that the header/pickup will operate smoothly and efficiently for years to come, it is important that it be correctly set up and properly maintained. Windrow headers with pickup attachments are designed to pick up windrows of agricultural products such as wheat, soybeans, canola, barley, etc. and small seed pick ups, and are only intended for such use.

Contained in this manual are safety precautions, operating instructions, and service and maintenance procedures for the PW7 Pickup Header, and Series IV Rake-Up and SwathMaster pickups. The units covered in this manual are compatible with John Deere 50 Series and 60 Series combines, Case IH Combines, New Holland Combines, Gleaner/Massey/Challenger Combines and Claas/Lexion combines.

The following header sizes are covered in this manual:

13 foot
15 foot

The following pickup models are covered in this manual:

PICKUP SERIES IV ATTACHMENTS

<u>Rake-Up</u>	<u>SwathMaster</u>
12' Small Seed	12' Small Seed
14'	14'
16'	16'

Note: Left and right hand are referenced from the operator's seat looking forward. The illustrations in this manual may not match your exact machine.

We welcome your suggestions, questions or comments regarding the installation, operation or maintenance of the header /pickup.

All printed publications are classified as uncontrolled documents and are subject to change without notice at the discretion of MacDon Industries Ltd.

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SECTION 1

PRODUCT IDENTIFICATION

When ordering parts or when requesting information or assistance always give the following information:

1. Model
2. Serial Number and Year of Production



Pickup Serial Plate Location

Record model and serial number of your header/pickup below:

PICK-UP

Model _____

Serial Number _____

SECTION 2 - SAFETY

The Safety Alert Symbol is used to alert the reader to important safety messages in this manual. When you see this symbol, be alert to the possibility of injury. Carefully read and observe all safety messages and symbols in this manual and on your machine to avoid serious injury or death.

SAFETY ALERT SYMBOL



THIS SYMBOL MEANS

-ATTENTION!

-BECOME ALERT!

-YOUR SAFETY IS INVOLVED!

DANGER: Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

WARNING: Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION: Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

ATTENTION: Indicates a potentially hazardous situation that, if not avoided, could result in machine damage.

IMPORTANT

Before any person uses this product he/she should take sufficient time learning all necessary precautions and procedures. Each operator should:

- Ensure all people, pets and tools are clear.
- Read and fully understand all procedures/precautions in the Operators Manual.
- Be instructed and experienced in safe and proper use of the unit.

If information not covered in this manual is required, contact your local dealer.

2.1 GENERAL SAFETY PRACTICES**All operators must:**

- Be instructed in the safe and proper use of this machine and understand all safety signs and instructions in this manual.
- Carefully read all safety messages in this manual and on your machine.
- Keep all safety signs in good condition. Replace when necessary.
- Use and maintain all safety lights and devices.
- Wear necessary protective clothing when operating or servicing machinery.
- Be prepared for emergencies by keeping a first aid kit and emergency numbers easily accessible.
- Have authorized personnel repair/replace any damaged or deteriorated parts immediately to reduce the risk of personal injury.
- Find a spacious, clear, and level surface to perform any maintenance or adjustments.
- Always shut-off machinery before performing any adjustments or service.
- Never remove obstructions from running machinery.
- Never operate machinery without all shields in place.
- Never engage pickup drive with people near machine.
- Review safety instructions annually.

- **Modifications to the machine not approved by MacDon Industries Ltd. are not allowed. Unapproved modifications may affect the safety, reliability, and durability of the machine and void warranty.**

2.2 SAFETY DURING COMBINE ATTACHMENT

- Find a spacious, clear, and flat work area.
- Read and understand all installation procedures. Refer to applicable section in this manual for reference.
- Check for obstructions on combine, header, and in work area before starting.
- Lower header and pickup to ground or engage feeder safety locks, shut off combine, remove key and wait until all moving parts have stopped before working around header/combine.
- Take extreme care when working around hydraulic lines. Hydraulic fluid under high pressure can penetrate the skin and cause serious tissue damage. Seek immediate medical attention if skin penetration occurs.
- At all times keep body parts away from the pickup & header when moving.



2.3 SAFETY DURING OPERATION

A) Extremity Lights



P00541

Extremity Light



P00542

Extremity Lights

The header comes with a left and right hand extremity light that works in conjunction with the flashing/signal combine lights. For bulb replacement, see appropriate section in this manual.

ATTENTION: Reflectors that are damaged or worn are to be replaced immediately.

NOTE: Red and Orange Reflectors are visible from the rear; amber is visible from the front. New reflectors are available from your dealer.

B) Drive Shaft Safety

- Shields are in place for your protection. Replace any worn or missing shields.
- Drive shaft shields are to rotate freely at all times (free from binding while chained). Replace worn shield bearings promptly.
- Never operate header without shields in place.
- Never make modifications to the drive shaft and shields.
- ALWAYS store the drive shaft in its storage holder. Never use safety chains to support drive shaft.
- DO NOT step on the drive shaft.
- Any servicing to the drive shaft must only be done when the header is lowered to the ground or the combine feeder house locks are engaged, the machine is shut off, the ignition key is removed and all moving parts have stopped. **Never** make adjustments to, or clean a running combine.
- Make sure drive shaft is attached properly before operation.
- Keep any loose fitting clothing, jewelry, or long hair away from moving parts, components, or retainer chains.



2.4 SAFETY DURING SERVICING

- Any servicing to machinery must only be done after the header is lowered to the ground or combine, feeder house is locked, is shut off, the ignition key is removed and all moving parts have stopped.
- Take extreme caution around hydraulic lines. Release all pressure in the system before servicing or inspecting for leaks. Hydraulic fluid under high pressure can penetrate the skin and cause serious injury. Never use your hands to inspect lines. Seek immediate medical attention if fluid is injected into the skin.
- Familiarize yourself with proper servicing procedures in this manual.
- Wear protective clothing and use personal safety devices when required.

A) Tire Safety

- A tire that explodes could cause serious injury. Have a qualified service technician service the tires.
- When inflating tires take extreme care. An over inflated tire can explode.
- Recommended tire pressure is 8-10 psi.
- Replace rim if overly rusted or cracks are noticed.
- Stand clear from tire when inflating. Use a clip-on air chuck, and extension hose.

B) Pickup Hold down Safety Locks



WARNING: OVERHEAD OBJECT HAZARD Always activate safety locks before working under raised hold down.

- Raise hold down all the way up with hydraulic cylinder.
- Engage hold down safety locks as shown.



P00669

Safety Lock Engaged

- Complete work underneath hold down.
- Disengage safety locks as shown.



P00670

Safety Lock Disengaged

SECTION 2  SAFETY

C) **Combine Feeder House Safety Locks**
(Safety Locks Will Vary According to Combine)

 **WARNING:** At no time is any service procedure to be performed without the header lowered to the ground or the feeder house safety locks engaged.

- a) Raise feeder house up completely.
- b) Engage feeder house lock.



Feeder House Lock Engaged
(May not be exactly as shown)

- c) Complete work underneath header/pickup.
- d) Disengage feeder house lock



Feeder house Lock Disengaged
(May not be exactly as shown)

SECTION 2  SAFETY

2.5 SAFETY INFORMATION/SIGN LOCATION

- Operators must read and follow all safety information in this manual and on safety signs located on the machine.
- Missing, damaged, or illegible safety signs must be replaced immediately.
- All new shields or components must include the latest safety signs.

All safety signs and their locations are shown in the illustrations below. Both three-panel (with text) and two-panel (graphics only) versions are shown.



Safety signs displaying the “Read Operators Manual” symbol are intending to direct the operator to the Operators Manual for further information regarding safety, adjustments, maintenance and/or procedure for specific areas of the unit.

RAKE-UP SPECIFIC SAFETY SIGNS



Rotating Drive Hazard, Pinch Point Located on Belt Guard



184371



2-PANEL

184386



184397

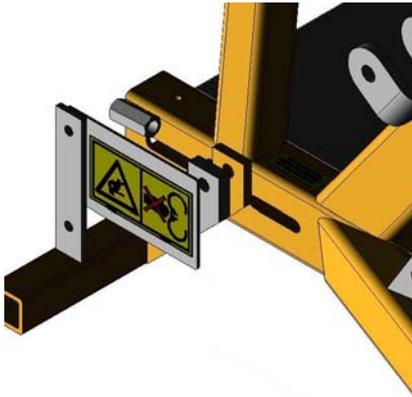


3-PANEL

184393

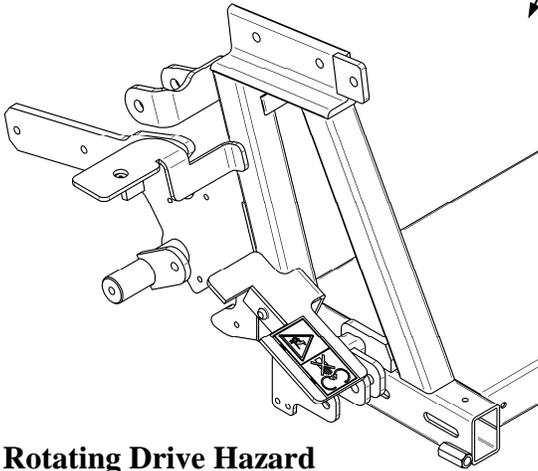


SECTION 2  SAFETY

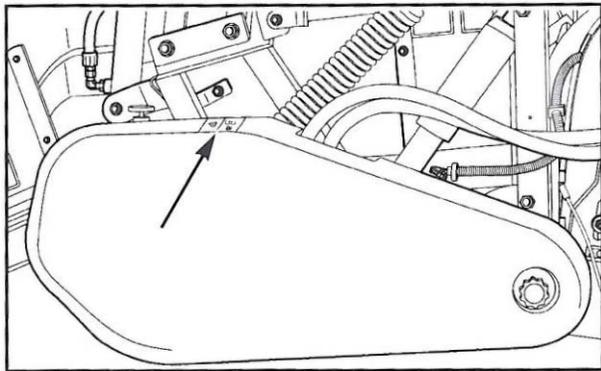


**Rotating Drive Hazard
Located on Frame under Belt Guard**

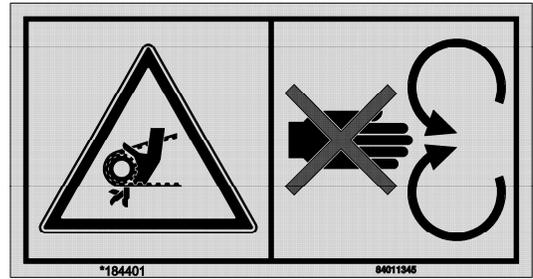
SWATHMASTER SPECIFIC SIGNS



**Rotating Drive Hazard
Located Frame under Belt Guard**



**Rotating Drive Hazard
Located on Belt Guard**



2-PANEL - 184401



3-PANEL - 184404



2-PANEL - 184371



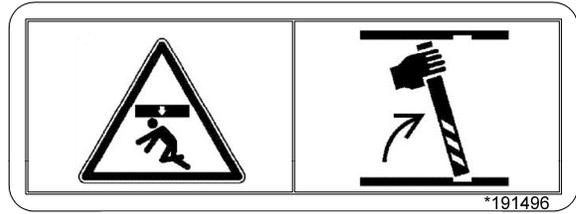
3-PANEL - 184397

SECTION 2  SAFETY

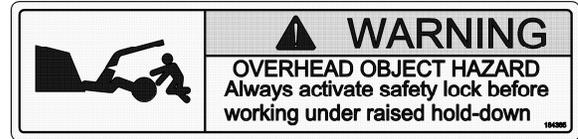
PICKUP SAFETY SIGNS (Rake-Up & SwathMaster)



**Warning, Safety Lock
Located on Lower Hold down Arms**



2-PANEL - 191496



3-PANEL - 184365



**Storage Brace Rotation
RH & LH Wind guard**



2-PANEL - 184384



3-PANEL - 184392



**Pinch Point Located on LH Idler Rotor
Shield (Rake-Up shown, SwathMaster similar)**



2-PANEL - 184386



3-PANEL - 184393

SECTION 2  SAFETY

HEADER SAFETY SIGNS



P00205

**Danger, Rotating Driveline, European
Located on Drive Shaft**



3-PANEL - 30316



2-PANEL - 191104

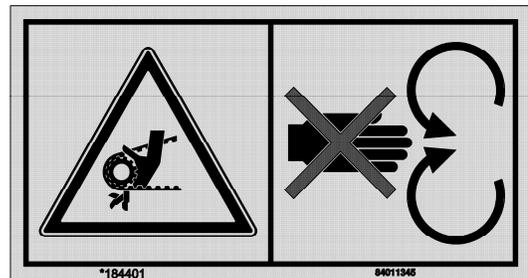


P00017

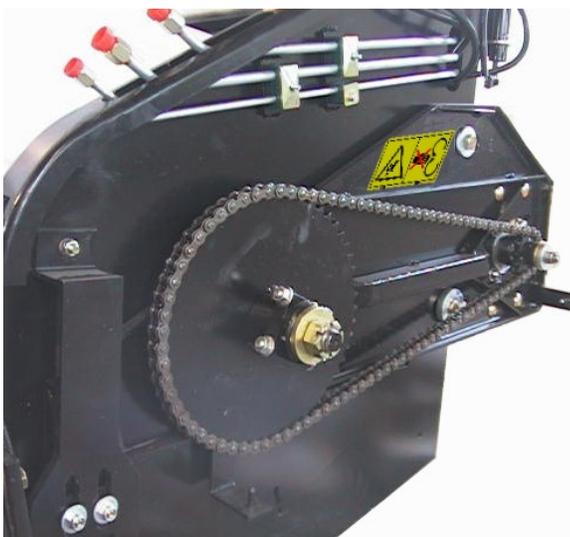
**Danger, Missing Shield
Located on Driveshaft (under shield)**



3-PANEL - 36651



2-PANEL - 184401

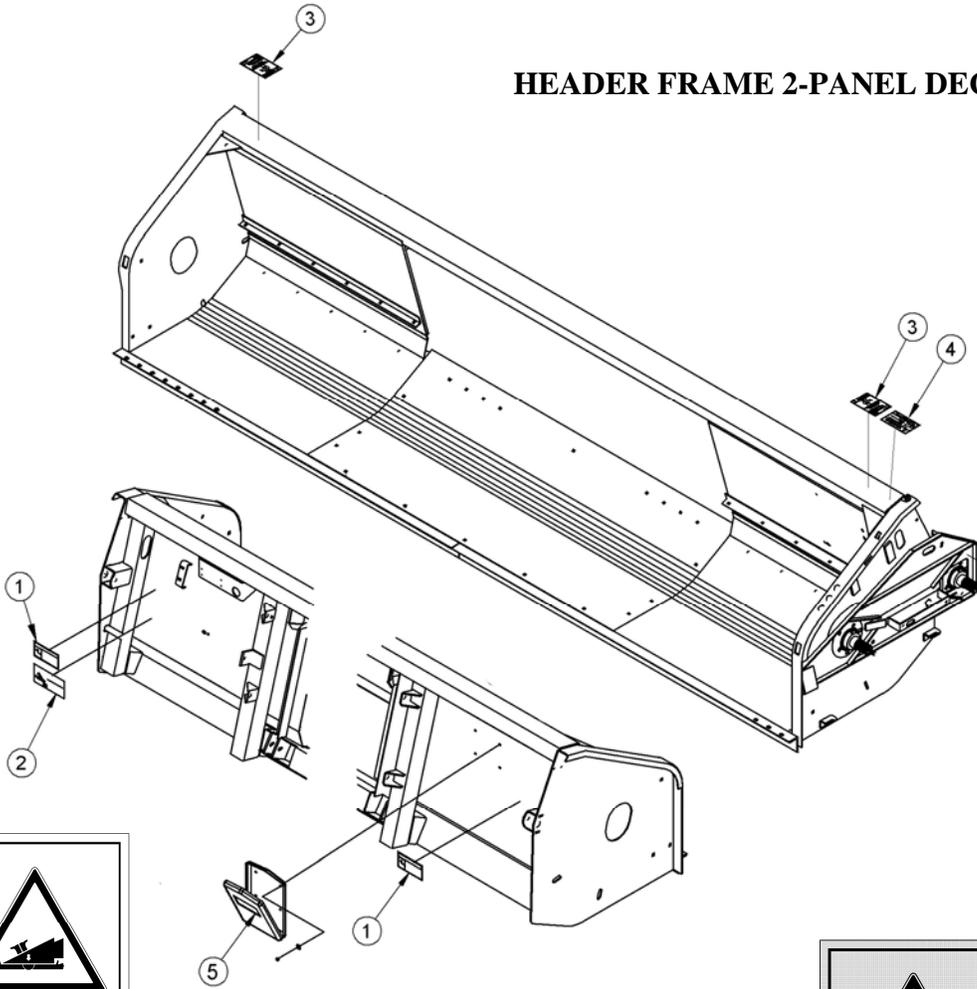


**Decal, Chain Entanglement
Located Above Chain (behind header LH shield)**



3-PANEL - 184404

HEADER FRAME 2-PANEL DECALS



1. Header Crushing Hazard
184370



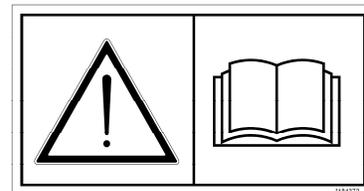
2. Keep Shields in Place
184385



3. Auger Wrapping Hazard
191494

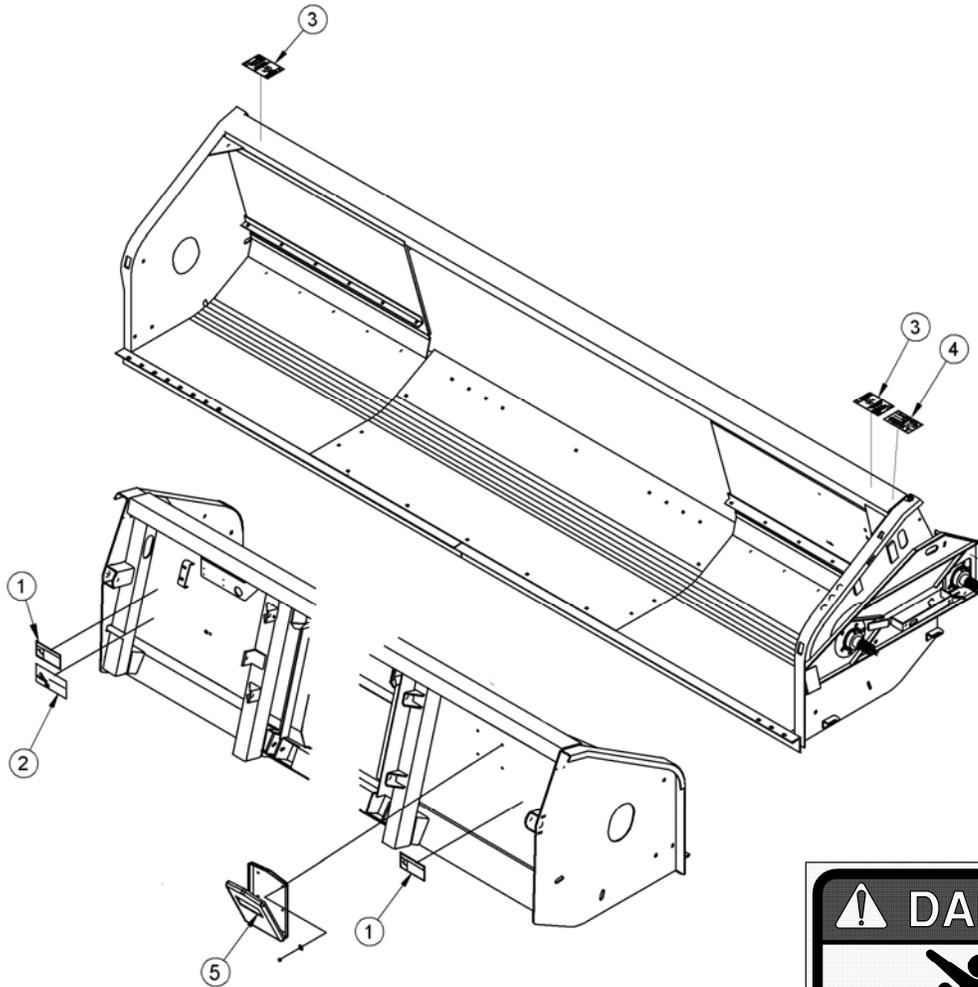


4. Rotating Drive Hazard
184371



5. Read Operators Manual
184372

HEADER FRAME 3-PANEL DECALS



1. Header Crushing Hazard - 184398



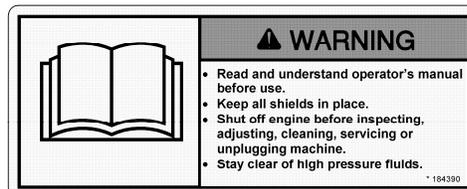
4. Rotating Drive Hazard
184397



3. Rotating Parts Hazard - 184406



2. Rotating Drive Line Hazard - 184395



5. Read Operator's Manual - 184390

SECTION 3

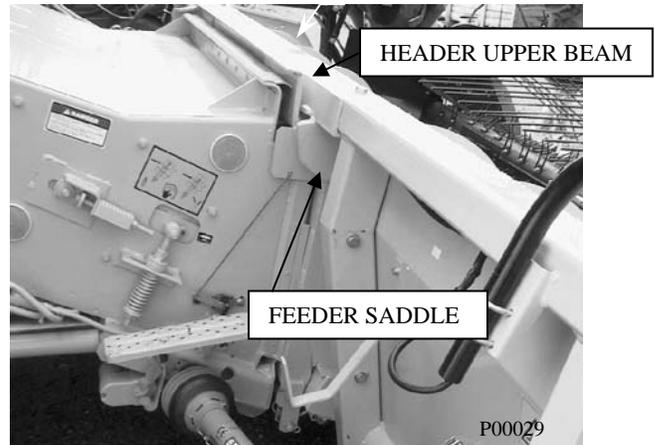
SETUP COMPLETION

3.1 CONNECTING HEADER/PICKUP TO COMBINE: JOHN DEERE / LEXION / AGCO

NOTE: For Case IH and New Holland Combines, see Section 3.2

NOTE: The operator of the combine should be well trained in the use of combine controls. Improper use of the combine could result in damage to property or serious injury or death.

- a) Check to see that all header and feeder house locking devices are open and ready for engagement.
- b) On combines equipped with feeder house lateral tilt, position the feeder house front face to be square with feeder house floor.
- c) Lower the combine feeder house so that the feeder house saddle will just pass under the upper beam of the header.
- d) Enter the header opening and lift the header off the ground. The feeder house saddle and header beam should now be firmly engaged.
- e) Raise the feeder house completely.
- f) **TURN OFF COMBINE ENGINE, REMOVE THE KEY FROM THE IGNITION, AND ENGAGE THE FEEDER HOUSE SAFETY LOCK.**



Positioning on Combine
(May not be exactly as shown)



Engaged Feeder House Lock
(May not be exactly as shown)

- g) Engage the header locking mechanisms, wiring and hydraulics. Refer to the “Completing Hook Up to Your Combine” section for combine specific instructions.
- h) Attach auger drive shaft. See “Drive Shaft Installation”-section 7.5 in this manual.
- i) Disengage the feeder house locks and secure in the storage position.

SECTION 3 – SETUP COMPLETION



Disengaged Feeder House Lock
(May not be exactly as shown)

Completing Hook Up To Your Combine

Each combine manufacturer has a different design for lower locking mechanism on the header. The locking mechanism is an important step in protecting your header/pickup from damage.

On all models the feeder house must be properly installed onto the header before the locks could be activated.

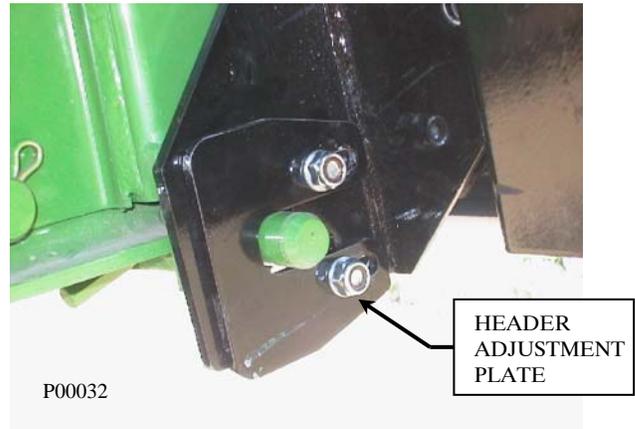
ATTENTION: Do not operate or move header without engaging the lower locking mechanism. Failure to do so may cause damage to your equipment.

3.1.1 JOHN DEERE

50 Series:

- Take the John Deere locking pin out of its storage position and slide it into the slot of the header.
- Loosen the nuts of the header locking plates.
- Position the plate so that the lower corner of the plate rests against the pin.

- Check that pin moves freely in and out.
- Tighten the header adjustment plate nuts.
- Modification to hydraulic lines and wiring harnesses may be required if adapter kit is not available from local dealer.



John Deere Locked Position



50 Series Open Position

60 Series:

60 Series combines come equipped with a multi function system, which connects the hydraulics, electrical and mechanical locks.

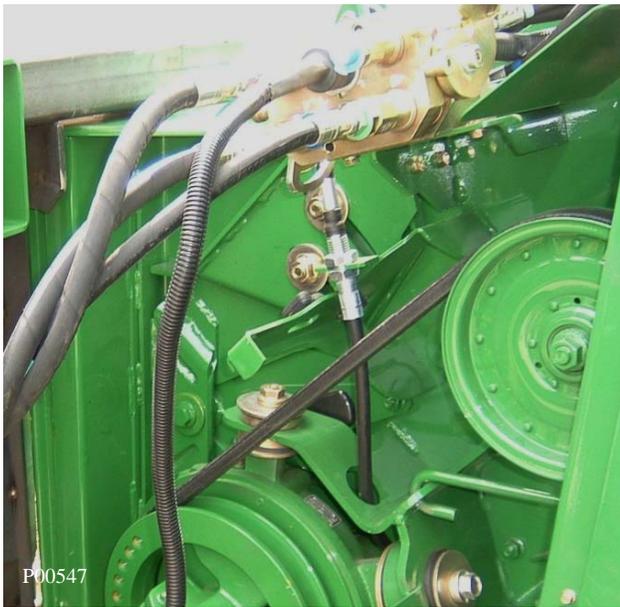
- Remove the hydraulic multi coupler from the storage bracket.
- Install the multi coupler onto the feeder house coupler.

SECTION 3 – SETUP COMPLETION

- c) Lower the lever into the engaged or locking position. This will automatically engage the header / feeder house locks, wiring and hydraulics.



Hydraulic Coupler in Storage Bracket



Hydraulic Coupler in Field/Locked Position

To Adjust Plates:

- Loosen the nuts of the header locking plates.
- Position the plate so that the lower corner of the plate rests against the pin.
- Check that pin moves freely in and out.

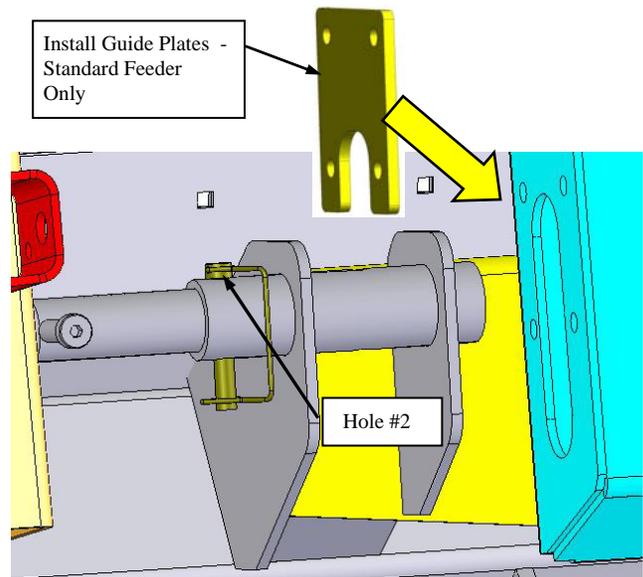
- d) Tighten the header adjustment plate nuts.



Lower Locking Pin

3.1.2 CLAAS / LEXION

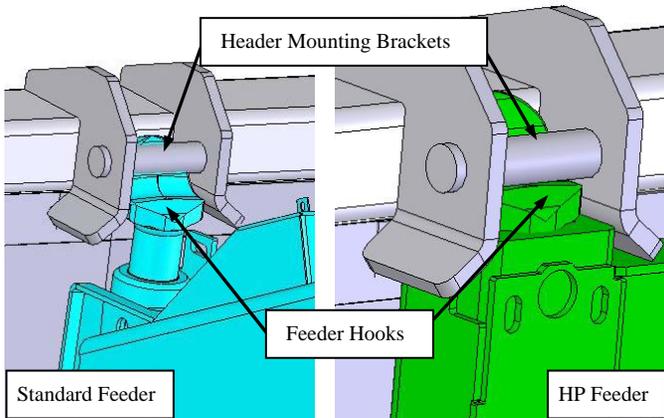
- a) Check that locking pins are in outward position and secured with clevis pin in hole #2.



- b) Guide plates are stored in the document holder on the back side of the header. Install guide plates at lower slots on **standard** feeder house only. Guide plates are not required with HP (Header Pitch) feeder house.

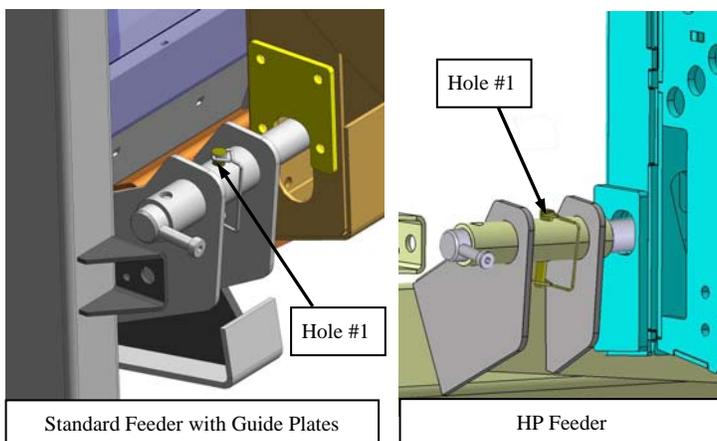
SECTION 3 – SETUP COMPLETION

- c) Disengage the feeder house locks and secure in the storage position.
Lower feeder house so hooks are below mounting bracket.
- d) Move combine into header opening and align cylinders or feeder hooks with mounting brackets on header.



- e) Raise feeder house completely and engage feeder house lock.
- f) Insert lock pins in place using hole #1. Pin must be at the top of the slot as shown.

Note: On combines equipped with feeder house fore-aft tilt, the feeder house face must be positioned so that the header floor is parallel to the ground when header is in operating position.



Combines with auto-contour:

Extend cylinder to approximately the middle position. Install guide plates as above to lock the auto contour. Guide plates are stored in the document holder on the back side of the header.

ATTENTION: Not installing locking guide plates on combines with auto-contour may lead to pickup disconnecting from combine, especially when auto-contour is tilted to one side. Severe machine damage can result.

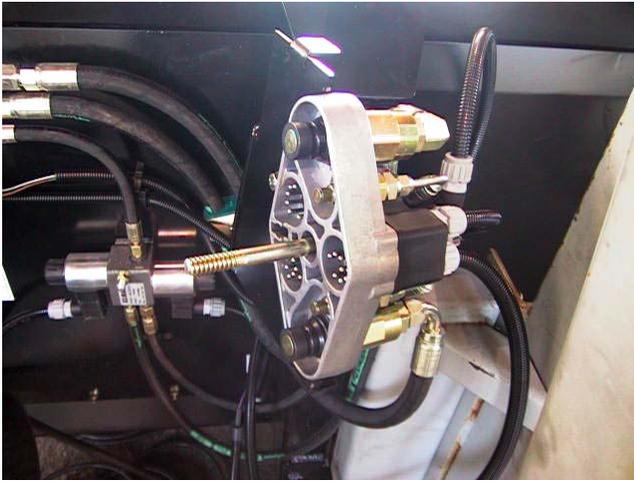
- g) Disengage pickup storage braces. See Storage Brace Disengagement in this manual.

ATTENTION: Never lower header to the ground while the locking pins are in place and storage braces are engaged. This will cause severe damage to your machine

ATTENTION: Locking pins must be correctly engaged into feeder slots. Operating the unit with locking pins disengaged or improperly engaged can severely damage the unit.

SECTION 3 – SETUP COMPLETION

- h) Remove the hydraulic/electrical multi coupler cover from the storage bracket.
- i) Install the multi coupler from the feeder house onto the header multi coupler.
- j) This will automatically engage the wiring and hydraulics.



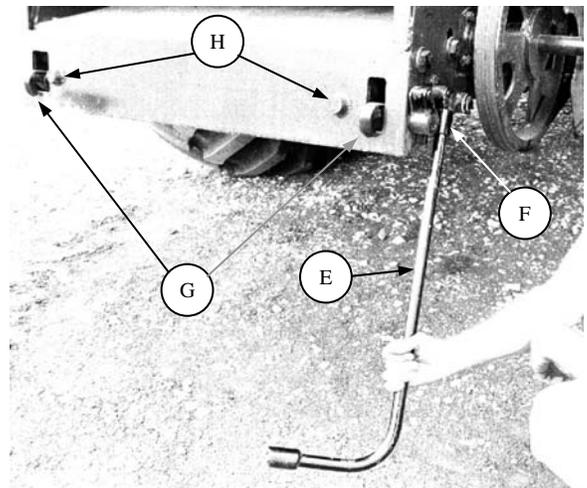
Header Multi Coupler



Feeder house Multi Coupler in Storage

3.1.3 AGCO

- a) Engage lower locking mechanism as follows:
Insert concave door tool (E) in latch socket (F) and rotate latch clockwise to lock hooks (G) into the adapter frame (both sides). **MAKE CERTAIN** that the latch is rotated over-center to securely lock the hooks. If it does not latch, check to determine if the lower pins (H) are seated in the adapter back. If not, place a block under the left end of the adapter and lower the adapter to reseat the pins. Re-latch the hooks.

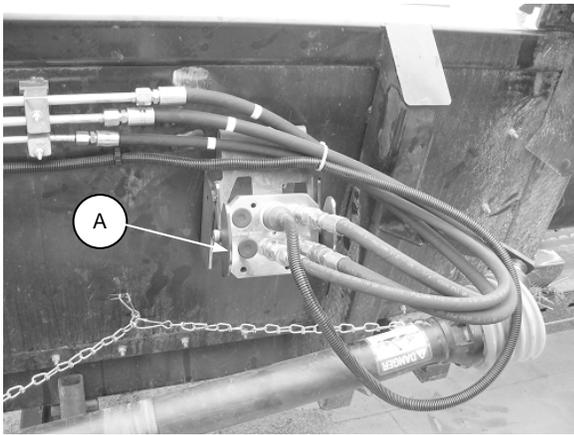


**LOCK HOOKS INTO ADAPTER FRAME
BOTH SIDES - Agco**

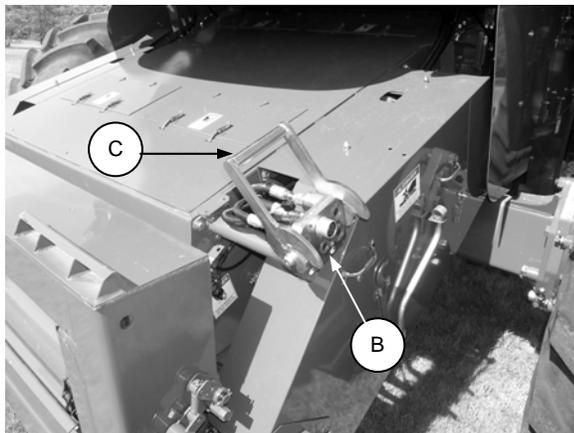
SECTION 3 – SETUP COMPLETION

- b) Attach hydraulics and electrical - Single Point Connection (if equipped):
Clean all hydraulic hoses and couplings before connecting to prevent contamination of hydraulic system.
Align the single point header connector (A) with the single point connector on the combine (B) and lock by moving latch (C) over-center.

NOTE: To install a header with single point connector on a combine without a single point connector, an adapter is required. See your combine dealer.

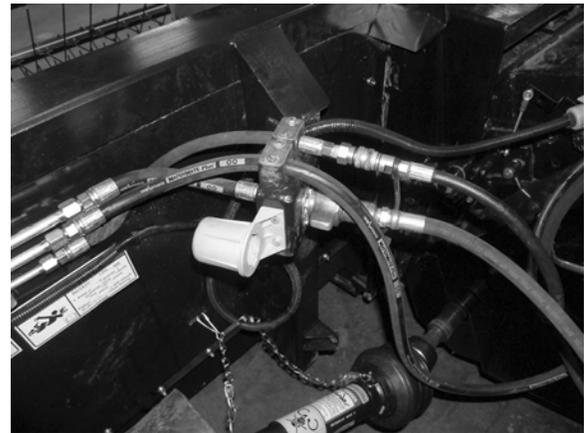


Agco Single Point Connector – Header Side



Agco Single Point Connector – Combine Side

- d) Connect hydraulic hoses to combine –
Without Single Point Connection:
Attach the ½ inch hydraulic hose from the combine to the female coupler on the header.
Attach the ½ inch hydraulic hose from the header to the female coupler on the combine.
Attach the 3/8 hydraulic hose (hold-down line) from the header to the combine.



**Agco Hydraulic Connections
(Non Single Point Connector)**

- e) Connect wiring harness – Without Single Point Connection:
Attach extremity lighting wiring harness to the combine receptacle, located on the left side of the feeder house. Ensure harness connector is pushed in far enough to lock into receptacle.



**Agco Electrical Connections
(Non Single Point Connector)**

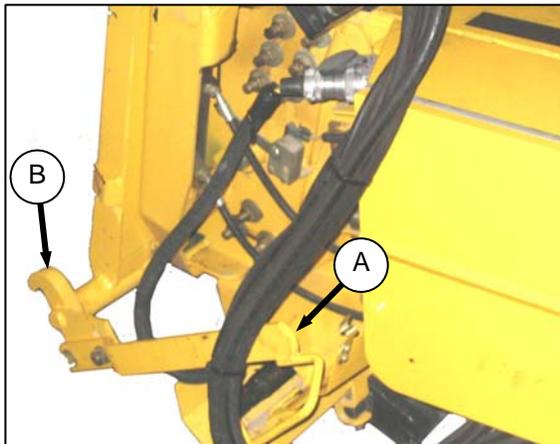
SECTION 3 – SETUP COMPLETION

3.2 CONNECTING HEADER/PICKUP TO COMBINE – CASE IH & NEW HOLLAND

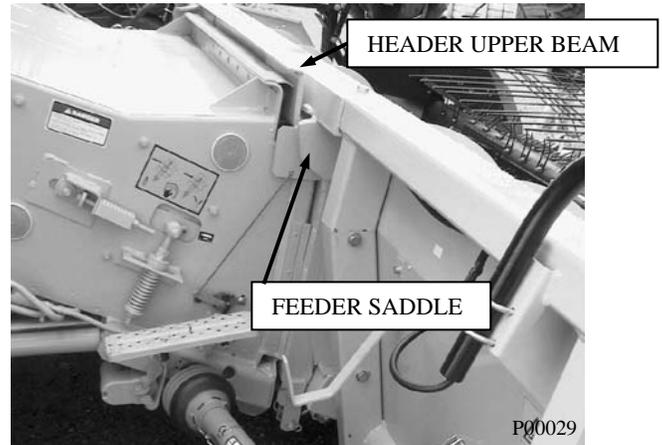
NOTE: The operator of the combine should be well trained in the use of combine controls. Improper use of the combine could result in damage to property or serious injury or death.

NOTE: For New Holland combines built prior to Model Year 2009, order B5614 – NH Auto Header Height Sensor Kit from your MacDon Dealer. Installation instructions are provided with the kit.

- a) Check to see that all header and feeder house locking devices are open and ready for engagement. Ensure handle (A) is positioned so that hooks (B) can engage header lower mounts.



- b) On combines equipped with feeder house lateral tilt, position the feeder house front face to be square with feeder house floor.
- c) Lower the combine feeder house so that the feeder house saddle will just pass under the upper beam of the header
- d) Enter the header opening and lift the header off the ground. The feeder house saddle and header beam should now be firmly engaged.



Positioning on Combine

(May not be exactly as shown)

- e) Raise the feeder house completely.
- f) **TURN OFF COMBINE ENGINE, REMOVE THE KEY FROM THE IGNITION, AND ENGAGE THE FEEDER HOUSE SAFETY LOCK.**

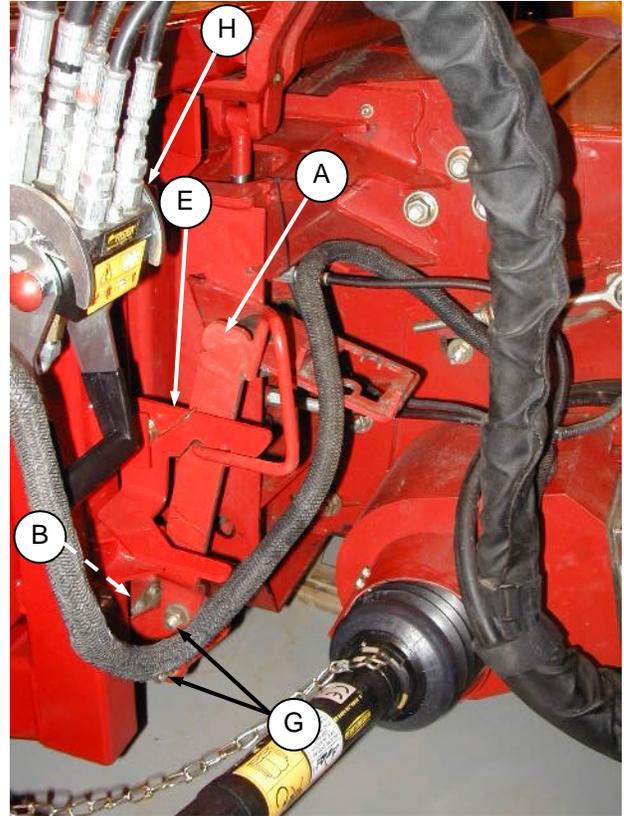
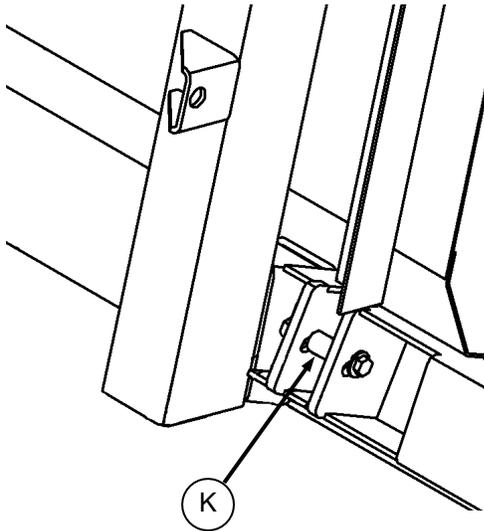


Engaged Feeder House Lock

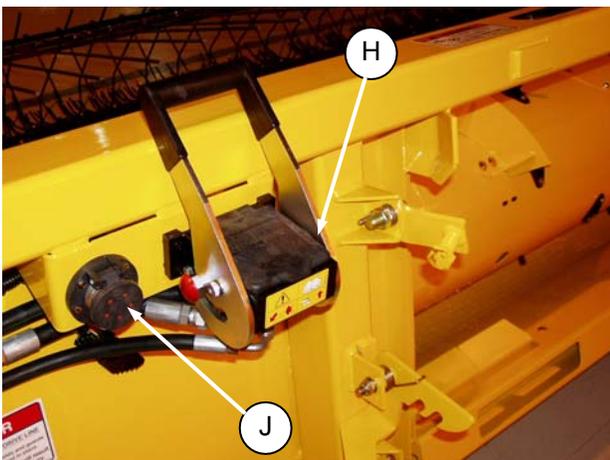
(May not be exactly as shown)

SECTION 3 – SETUP COMPLETION

- g) Push up on handle (A) on combine so that hooks (B) from photo on page 2 engage header lower mounting pins (K) on both sides of the feeder house.
- h) Be sure slot in lever (E) engages welded rod on handle (A) to lock handle in place.
- i) If hook (B) does not fully engage header lower mounting pin (K) on both sides of the feeder house when (A) and (E) are engaged, adjust position of mounting pin (K) in slot as required.
If force to engage handle (A) and lever (E) is too loose or excessive, loosen bolts (G), and adjust lock force as required. Re-tighten bolts.



- j) Connect Hydraulic Multi-coupler at (H) and electrical harness at (J).



- k) Disengage the feeder house locks and secure in the storage position.



Disengaged Feeder House Lock
(May not be exactly as shown)

SECTION 3 – SETUP COMPLETION

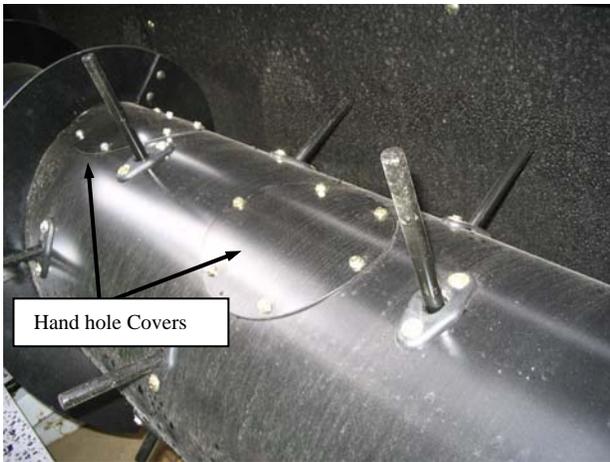
3.3 FEEDERHOUSE WIDTH CONVERSION

For John Deere, Case IH, New Holland and Agco Combines, see the instructions supplied with the mechanical completion package to initially configure the header to suit your combine. For Lexion combines, machines are factory configured for narrow combine feeder. Before use with a Lexion combine with wide feeder house, the header must be reconfigured using the supplied parts as follows:

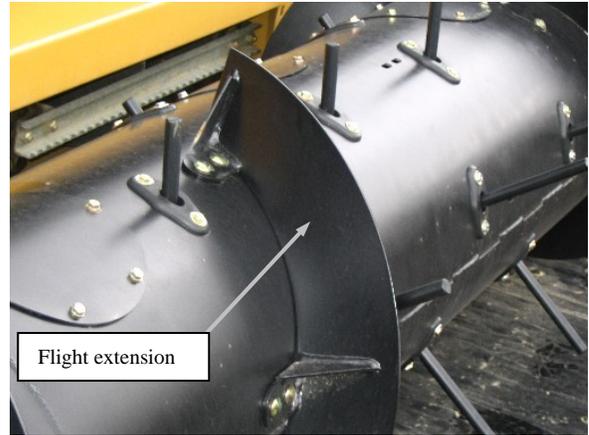
Lexion – Narrow to Wide:

NOTE: These instructions can also be used to convert a header configured for a John Deere narrow feeder combine to a wide feeder house. For Agco combines, see your dealer for conversion instructions for the three available feeder house widths.

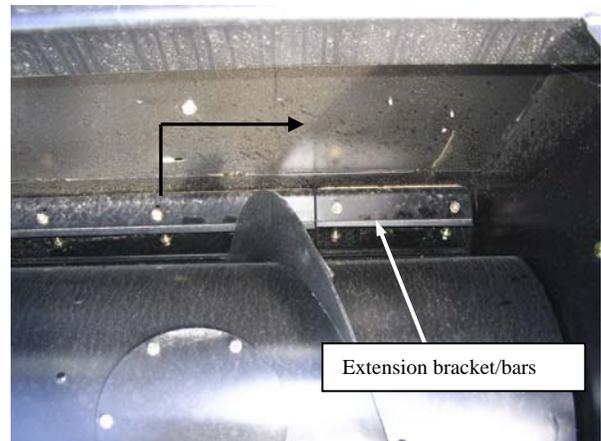
- a) Remove the two outer auger hand hole covers to gain access to inside of auger.



- b) Remove the auger flight extensions. These are the innermost pieces of flighting on each side of auger center.



- c) Remove finger hole covers and add two additional auger fingers and finger guides at the next two open locations at both sides of the auger (total of 4). These are shipped in the document case at back of header.
- d) Reinstall hand hole covers.
- e) Remove lower stripper bar and stripper bar extensions.
- f) Move lower stripper bars outward one hole so they are flush with combine feeder house opening and bolt to the header floor.



SECTION 3 – SETUP COMPLETION

- g) Attach removed stripper bar extensions to the outside of the back wall of header for storage.



Stripper Bar Storage

- h) Adjust stripper bars. See section 4.10 in this manual.
- i) Save all removed components for conversion back to narrow opening at a later date if necessary. In this case, the process described above must be reversed.

3.4 DISENGAGING STORAGE BRACES / REMOVING CYLINDER BRACES

NOTE: Before disengaging storage braces, raise the header so wheels are just off the ground.

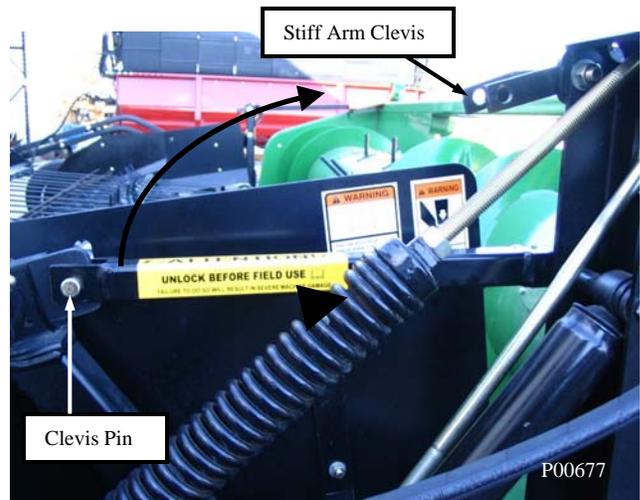
Pickups are delivered with the storage and cylinder braces engaged. Storage and cylinder braces are located on each side of the pickup. Before the pickup can be used, storage braces **must** be disengaged or machine will be damaged.



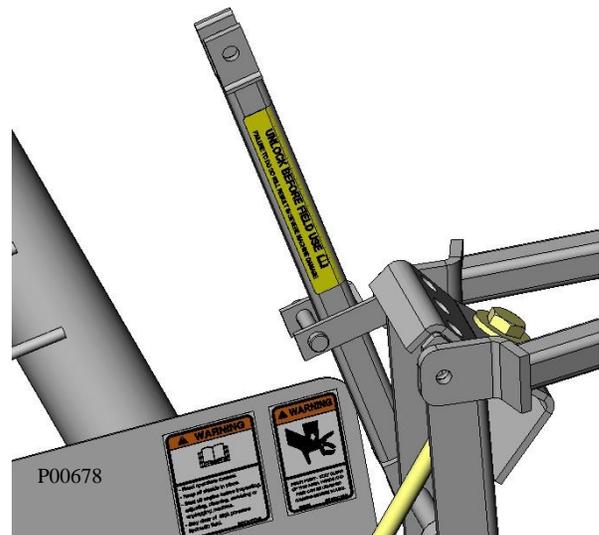
P00659

Storage Brace Disengagement

- a) Remove clevis pin.
- b) Rotate storage brace upward into the stiff-arm clevis.



- c) Place clevis pin in stiff-arm clevis and replace clip pin to secure brace upwards.



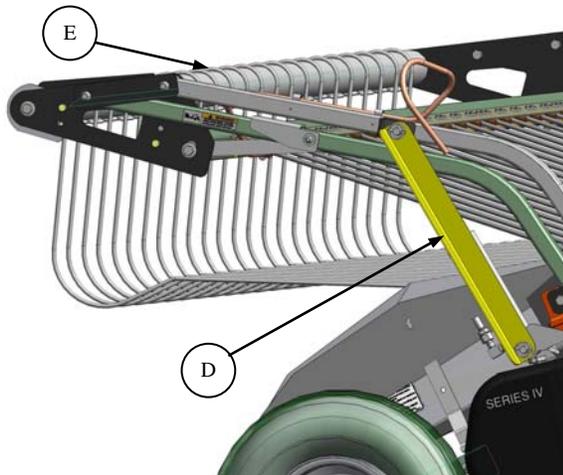
Storage Brace Disengaged

SECTION 3 – SETUP COMPLETION

Remove Cylinder Shipping Braces

NOTE: Do not remove yellow shipping braces (D) until unit is laid down and arms are moved to working position.

- a) Support front of hold down assembly (E) and remove the top lynch pins, washers and cylinder pins securing braces (D), both sides.
- b) Rotate braces down. Raise cylinders until aligned with top pin position and reinstall top cylinder pins, washers and lynch pins.
- c) Remove bottom lynch pins and washers. Remove braces and reinstall the washers and lynch pins, both sides.



Remove Cylinder Shipping Braces

- b) Lift the hold down completely to the top. Continue to force the cylinders up for one to two seconds to ensure the cylinders re-phase. Both cylinders should be fully extended.
- c) Lower the hold down. The cylinders should lower at the same time and at the same rate. It should take from 12 to 18 seconds for the hold down to lower from the highest point.
- d) Completely lower the hold down. The cylinders should stop at the same time. It is acceptable for the slave cylinder to remain extended from 0 to 1/2" (13mm) when the master cylinder is fully retracted.

Should the hydraulics not perform as above refer to the procedures in the service section of this manual.

3.5 TESTING HYDRAULIC HOLD DOWN

NOTE: All testing should be performed with the header/pickup in operating position so that the wheels are on the ground and the distance from the ground to the center of the rear roller is about 14" (356mm).

- a) The hold down is controlled by the reel lift control located in the combine cab. Activate the control to lift the hold down. The cylinders should begin lifting simultaneously.

SECTION 4 – ADJUSTMENTS

Pickup adjustments to be performed only when:

- Feeder house locks are engaged or pickup is lowered to the ground.
- Combine is shut off.
- The key is removed.
- All moving parts have stopped.

4.1 TIRE PRESSURE AND WHEEL TORQUE

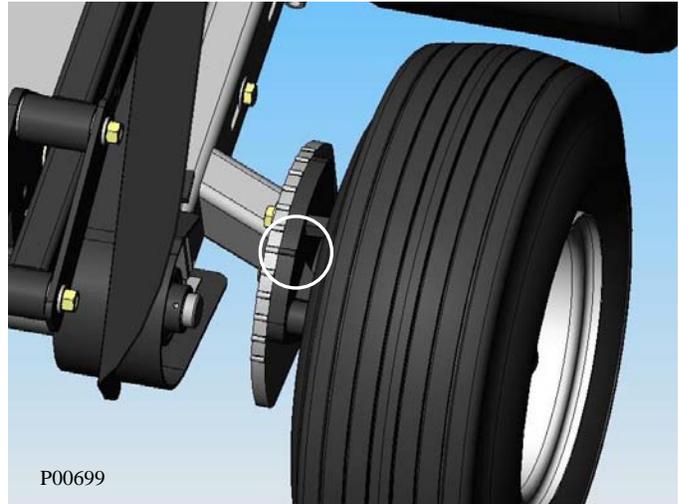


WARNING: An over inflated tire could explode and cause serious injury or death. Read tire safety section before continuing.

- a) Tire inflation: 8 to 10 PSI (55-69kPa)
- b) Wheel bolt torque: 60 lb-ft

4.2 TEETH HEIGHT (WHEEL) ADJUSTMENT

The proper height adjustment should be checked to ensure the set-up of the pickup is correct. A clearance of 1/2 inch (12mm) between the teeth and the ground is recommended as an initial setting. Line up the 6th cog from the bottom on the pick up frame wheel plate with the adjustment cog on the wheel spindle plate. See following.



Recommended Initial Setting

1. Make sure tire pressure is in desired range. (8-10 psi.)
2. Position the pickup rear roller height to 14" above the ground (350mm). Check tooth height at this time and proceed with further adjustment if required.
3. Raise pickup until center of rear roller is approximately 20" off of the ground.
4. Using a 3/4" wrench, loosen the clamping bolt on one side of the pickup.
5. Using two 3/4" wrenches, move the adjustment nut to the desired clearance.



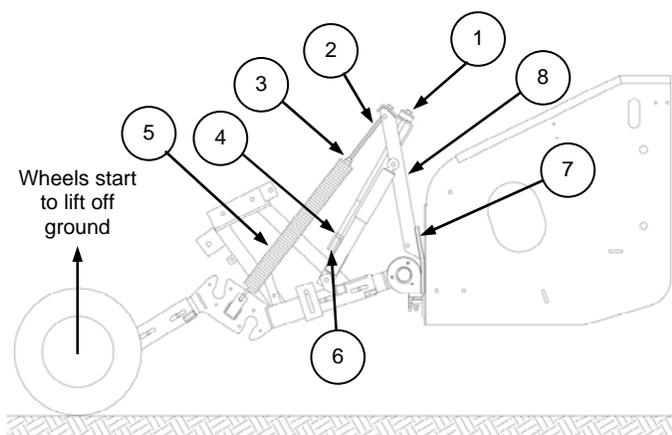
Wheel Adjustment

SECTION 4 - ADJUSTMENTS

6. Tighten the clamping bolt to lock into place
7. Repeat steps 4 to 6 for the other side. Match the LH and RH wheel height using the cogs on the wheel plates.
8. Adjust suspension.

NOTE: When wheel height is changed, suspension should be adjusted as well.

4.3 SUSPENSION ADJUSTMENT



Suspension System Assembly and Parts List
(Illustration May Differ)

1. Lifter Adjustment Bolt (w/rubber stoppers)
2. Spring Bolt
3. Spring Bolt Locking Nut
4. Lifter Adjustment Bolt Locking Nut
5. Spring
6. Lifter Bracket
7. Mounting Bracket Plate
8. Channel Upright

- a) Adjust tooth/wheel height. See previous page.
- b) Lower header until wheels just touch the ground. [Rear roller approximately 20 inches (508 mm) above the ground.]
- c) Tighten the spring bolt (2) evenly on both sides until the wheels begin to lift off the ground. Turn the spring bolt clockwise to lift the wheels and counter clockwise to lower the wheels.

NOTE: The friction in the gas shock absorbers must be compensated for by lifting the wheels during tightening and allowing them to fall to their normal resting position. The height of the wheels should be checked in this manner after every 1/2 inch (12mm) of spring adjustment.

- d) Tighten the spring bolt-locking nut (3) against the spring casting to prevent loosening.
- e) Raise header so wheels are approximately 6 inches (150 mm) off the ground.
- f) Lower storage brace into engaged (float lockout) position and insert clevis pin (see Section 3.4). If pin does not go in, adjust lifter adjustment bolt (1) so clevis pin can be easily installed and removed.
- g) Jam the lifter adjustment bolt-locking nut (4) against the lifter bracket (6).

Note: If ground speed is above 7 mph (11 km/h) it may be necessary to back off the float to prevent the header from bouncing excessively.

Note: During field operation, the rear roller shaft should be at 14 inches (350 mm) above the ground.

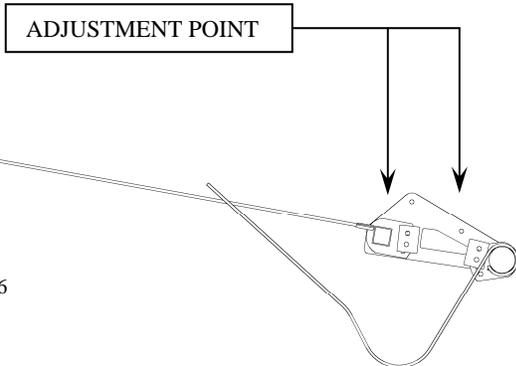
4.4 SPRINGWIRE/FIBREGLASS ROD ADJUSTMENT

The spring wires and the fiberglass rods must be set properly for different crop and conditions.

- a) Remove the clevis and hitch pins and adjust the spring wire tube so that the spring wires protrude up through the fiberglass rods as illustrated. This will protect the fiberglass rods from becoming damaged by the spring wire edges.

SECTION 4 - ADJUSTMENTS

NOTE: The purpose of the fiberglass rods is to provide a smooth, even flow of material under the auger and to the combine.



D00046

Spring Wire and Fiberglass Rod Adjustment



P00701

Hold down Clevis and Hitch Pins

NOTE: To reduce shelling in heavy swaths, it may be necessary to rotate the spring wires completely out of the way.



P00171

Hold down Adjusted for Short Crops



P00172

Hold down Adjusted for Average Crops



P00173

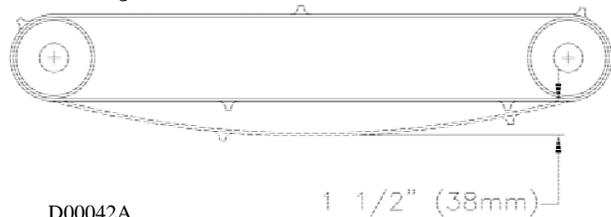
Hold down Adjusted for Heavy Crops

NOTE: In some cases, if the hold down assembly is moved substantially the suspension should be retuned. Rotate the spring wires clear before continuing to operate.

4.5 DRAPER BELT TENSIONING

The pickup draper belts are installed and set at the factory, however the draper belt tension should be checked before operating.

A) Adjustment:

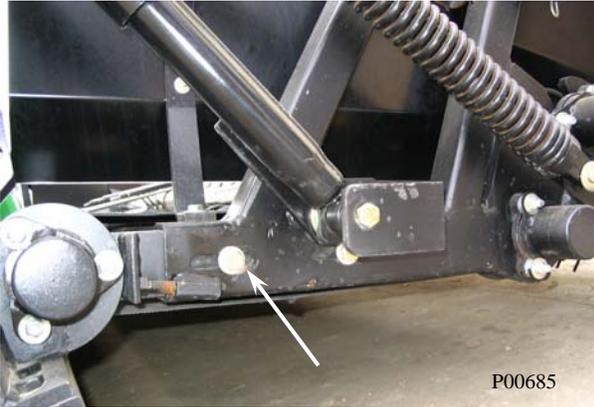


D00042A

Draper Belt Adjustment

SECTION 4 - ADJUSTMENTS

- a) Loosen 1/2-inch carrier bracket bolts shown in Pickup Belt Tensioner and Carrier Bracket Bolts.
- b) The belts are tensioned using 1/2 inch set screw.



Carrier Bracket Bolts



Pickup Belt Tension Set Screws

- c) Tension the belts until there is approximately 1 1/2 inches of belt sag on conventional Rake-Up and Swathmaster pickups and SwathMaster Small Seed pickups, and 2 inches of belt sag on Rake-Up Small Seed pickups when lifting midway between rollers. This adjustment is shown in the Draper Belt Adjustment For Conventional/Small Seed Pickups.
- d) Tighten 1/2-inch carrier bracket bolts.

NOTE:

1. When the pickup is mounted on the combine, there should be visible sag in the bottom side of the draper belt(s).
2. Some draper belts when new are very tacky. Talcum or baby powder rubbed into the belts may help to reduce the tackiness. In addition, for the first few hours of break-in, the belts may need to be run looser than normal.

**DRAPER BELTS TO BE
TENSIONED ONLY ENOUGH
TO PREVENT SLIPPAGE**

P00664

DO NOT OVER-TIGHTEN THE BELTS!

This can cause a number of problems:

1. Joining bolts can pull out of draper belts.
2. The center belts will slip on conventional pickups.
3. The belts will crawl over the dividers.
4. The rollers or bearings could be damaged. Any belts that fail from being over tightened will not be covered under warranty!

B) Belt Alignment—SwathMaster Small Seed Pickups

If you are having trouble with the belts moving sideways out of the pulleys and wearing the belt edges, the following procedure should be followed:

- (a) First, check draper belt tension. An over tensioned draper belt will tend to crawl sideways more. If you are not sure, try loosening the belt very slightly and then re-evaluating.

SECTION 4 - ADJUSTMENTS

- (b) Check that each side of the draper is tightened evenly. If the drapers are not tightened evenly, sometimes diagonal ripples will appear running across the belt. Generally, loosen the side that the ripples are moving away from at the rear roller.

- (c) If draper is tracking off to one side, loosen the opposite side slightly. Make small adjustments and watch tracking for a minute before re-adjusting.

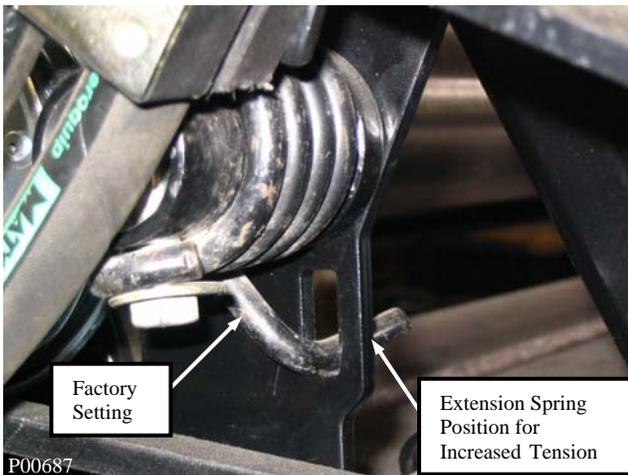
SECTION 4 - ADJUSTMENTS

4.6 PICKUP DRIVE BELT TENSION

Both Rake-Up and SwathMaster models come equipped with self-tightening v-belts. SwathMaster units have an additional method to increase tension if required.

SwathMaster adjustment is as follows:

1. Remove drive shields. (See Service-Section 7)
2. Eliminate v-belt tension. (See Service-Section 7)
3. Remove tension spring and reposition so the extension is outside the mount bracket.



4. Tighten the tension spring hardware and put v-belt back on sheaves.

4.7 SPEED CONTROL & HEIGHT CONTROL

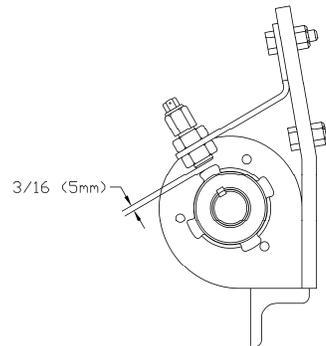
Depending of availability of these features on various combine makes, the units may be factory equipped with the speed control and height control features. Refer to the following for information to adjust and operate these features.

Speed Control

In order for the speed control to operate properly the sensor must be adjusted to read the target or sprocket teeth.

The sensor height can be adjusted up or down by loosening the 3/4" jam nuts with a wrench. Adjust to a horizontal clearance of 3/16" (5mm). Loosen the target sensor and slide it on the roller shaft until the desired clearance is achieved between the sensor and a sprocket tooth. When proper alignment is achieved, tighten the lower nut to lock the sensor into place and tighten the setscrew to maintain target adjustment. Refer to Section 5.1 for optimum pick up speeds and your combine operator's manual for the combine portion of Dial-a-Speed operation.

ATTENTION: Loosen the lower nut first when removing or adjusting the sensor.



Sensor Details
(Target May Not Be As Shown)

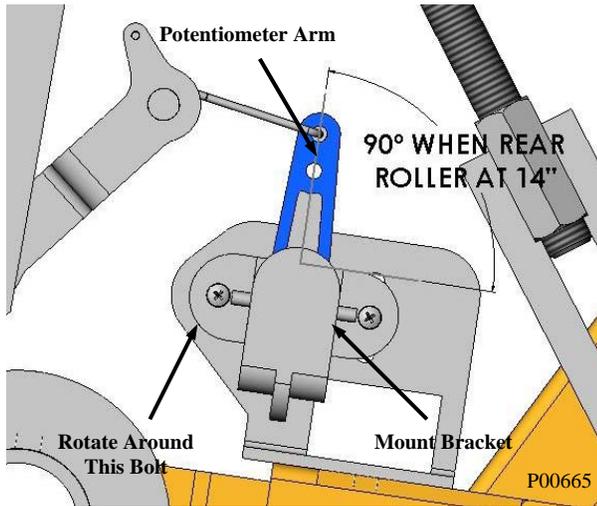
Height Control

NOTE: Never make any adjustments to the AHC while the AHC unit is active in the combine. Adjusting the AHC unit will cause the feeder house to raise and lower.

Under normal conditions, the optimum pick up height is achieved when the rear draper roller is 14" off of the ground. For normal conditions, set the AHC so that it is in the neutral position when

SECTION 4 - ADJUSTMENTS

the pickup rear roller is at the 14" mark. See following illustration.



Components in Neutral Position

To set the AHC to this position:

1. The AHC switch in the combine should be turned **off** and the draper belts properly tensioned. (See Section 4.5) Each subsequent time the belts are adjusted, the AHC should be adjusted as well
2. Lift the header until the rear draper roller is 14" from the ground.
3. Loosen slightly, both nuts that hold the potentiometer to the mount bracket. Rotate the assembly around the left side bolt. The right bolt will move along the slot. When the arm on the potentiometer is perpendicular to the potentiometer bracket it is in the neutral position.
4. Retighten the nuts so that the potentiometer is secure.
5. Refer to your combine operator's manual for the in-cab calibration procedure.
6. Test the function of the AHC. If the front end of the pick-up goes up (as if going up a hill) the header height should move up to compensate. If the pick-up front goes down (as if dropping into a hole) the header should drop to compensate.

4.8 AUGER FINGER ADJUSTMENT

ATTENTION: Do not adjust fingers to less than the minimum 1/4-inch clearance to the header bottom.

Finger Adjustment Procedure

- a) Loosen the clamping nut.



Finger Adjustment

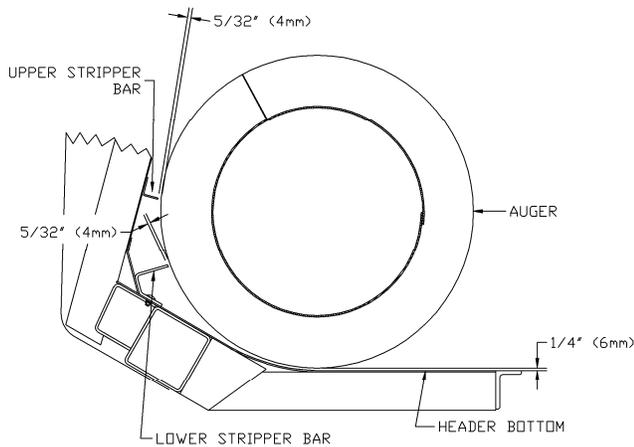
- b) Move the handle in the desired direction.
Counterclockwise = Fingers retract
Clockwise = Fingers extend
- c) When the desired position is found, tighten the clamping nut.

SECTION 4 - ADJUSTMENTS

4.9 AUGER ADJUSTMENT

The auger is a very important component in getting a smooth, high capacity flow of crop into the feeder house. Factory auger setting is not intended to be field ready for all types of crops. The auger must be adjusted for different crop conditions.

The auger must also rotate freely without touching the header floor or stripper bars. Check the minimum factory clearance prior to operation.



D00302

Factory Settings

(Illustration May Not Be Exactly as Shown)

A) Auger Clearance to Header Bottom

For heavy or bulky crops, a clearance of 25mm (1 inch) can increase header capacity.

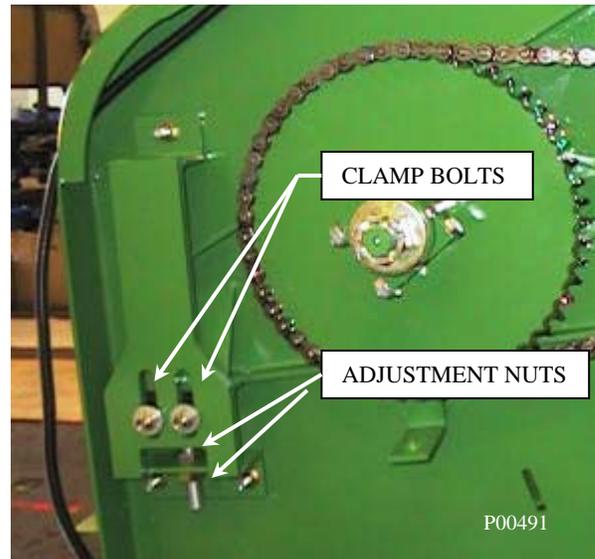
For a lighter crop, a minimum clearance of 6mm (1/4 inch) will prove to be more effective.

ATTENTION: If the auger contacts the header bottom, excessive wear will occur to auger and header bottom.

The clearance between auger and header bottom can be adjusted as follows:

Adjust both ends of the auger to maintain a uniform clearance across the width of the header.

- Shields can remain in place.
- Loosen clamp bolts protruding through rubber stopper and sidewall.
- Back off the lower auger height adjustment nuts.



Auger Height Adjustment Nuts

- Turn the top nuts to raise or lower the auger on both ends.
- Turn the auger by hand and check for clearance along the entire length of the auger.
- Tighten the lower adjuster nuts.

Clearance between auger and strippers is to be rechecked after the auger height setting has been changed. See Auger Clearance to Stripper Bar.

B) Auger Forward/Rearward Adjustment

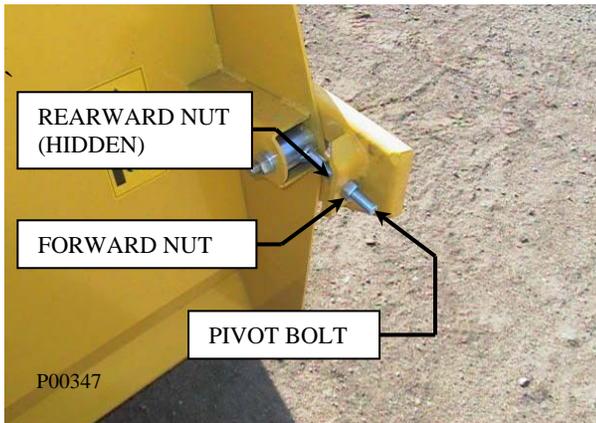
The auger can be moved forward or rearward to adjust stripper clearance or improve auger-feeding performance. The factory settings will prove very effective in most crop conditions. In some cases of small grain crops, the auger may

SECTION 4 - ADJUSTMENTS

be moved further ahead or back in the auger trough to improve performance.

Ensure that that the auger is adjusted evenly on both sides.

- a) Loosen the auger forward/rearward adjustment nut on both sides. See Forward/Rearward Adjustments.
- b) Turn the rearward nut to pull the auger back to reduce clearance.
- c) Turn the forward nut to push the auger ahead to increase the clearance.
- d) Tighten the adjusting nuts to lock the auger in the desired position.



Forward/Rearward Adjustments



Upper and Lower Stripper Bars

The clearance between the auger and stripper bars is set at the factory to a minimum of 2mm (3/32 inch). Minimizing the clearance of the auger and stripper bar can reduce crop carry over.

The upper stripper bar bolts are accessible from the top of the header.

A maximum reach of 16mm (5/8inch) can be accomplished by using the slotted holes in the upper stripper bar bracket and bar. If more clearance is desired, see Auger Forward/ Rearward Adjustment.

4.10 **STRIPPER BAR ADJUSTMENT**

The header is equipped with a pair of upper and lower stripper bars.



DANGER: Lower header to the ground or engage feeder house locks, shut-off combine, remove ignition key, and wait for parts to stop moving before performing this adjustment

ATTENTION: If the auger comes in contact with the stripper bar excessive wear will occur. Disconnect the driveshaft from combine and rotate auger by hand to find the minimum clearance, then complete all adjustments from that point.

SECTION 4 - ADJUSTMENTS

4.11 HEADER DRIVE CHAIN ADJUSTMENT



DANGER: Lower header to the ground or engage feeder house locks, shut off combine, remove ignition key, and wait for parts to stop moving before performing this adjustment

NOTE: Check and adjust chain tension after the first 3 hours of operation, and at regular intervals thereafter.

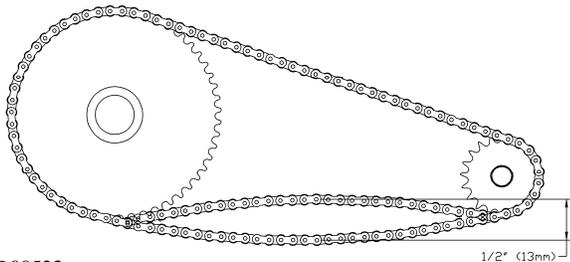
Check header drive chain tension with a flat screwdriver using the access hole on the left side shield. See picture following.



P00480

Checking Chain Tension

The drive chain must be adjusted to give 1/2 inch to 3/4-inch deflection at the bottom with approximately 10 lb (5kg) of force applied.



D00523

Drive Chain Deflection

Adjustment Procedure:

NOTE: It is not necessary to remove the side panel for chain tension adjustment.

- a) Loosen the 4 drive shaft bracket bolts only enough to allow the bracket to slide in slots.

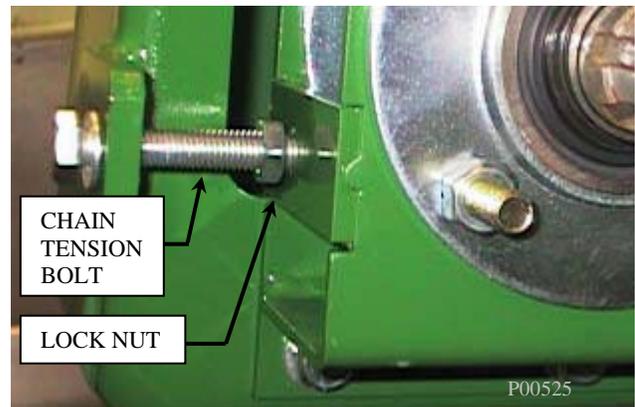
ATTENTION: Attempting to adjust chain tension without loosening all 4 drive shaft bracket nuts will damage the chain tension bolt bracket.



P00525

Drive Shaft Bracket Bolts

- b) Loosen the locknut on the chain tension bolt.



P00525

- c) To relieve the chain tension, turn the chain tension bolt counterclockwise.
- d) To tighten the chain, turn the chain tension bolt clockwise.

SECTION 4 - ADJUSTMENTS

- e) Retighten the 4 drive shaft bracket bolts to 57 - 60 ft lb.
- f) Tighten the lock nut to secure the chain tension bolt.
- g) Re-check chain tension as above.

SECTION 5

OPERATING INSTRUCTIONS

5.1 OPERATING SPEED

Performance of the pickup in various crop and field conditions largely depends upon its operating speed. If the swath is pushed ahead, the pickup speed is too low and some of the crop may remain unpicked. If the swath is torn apart and is pulled toward the combine header, the pickup speed is too high and uneven combine feeding will occur. Pickup operating speed is adjusted from the combine cab by regulating oil flow to the pickup hydraulic motor.

RAKE-UP: As a guide for initial settings of pickup operating speed, a ratio of 11 RPM of idler or drive rotor per 1 MPH of combine ground speed can be used. For example: when a combining speed of 5 MPH (8 km/h) is selected, the rotors shall run at $11 \times 5 = 55$ RPM; at 3.5 MPH (5.6 km/h), the rotors shall turn at $11 \times 3.5 = 38.5$ RPM.

If a shaft tachometer is available, set the rear roller shaft speed at 73 RPM per 1 MPH of combine speed. For example: when a combining speed of 5 MPH (8km/h) is selected the rear roller shaft shall run at $73 \times 5 = 365$ RPM.

SWATHMASTER: As a reference for initial settings of pickup operating speed, a ratio of 13 RPM of the front draper belt per 1 MPH of combine ground speed can be used. **For example:** when a combining speed of 5 MPH (8km/h) is selected, the front draper belt shall run at $13 \times 5 = 65$ RPM; at 3.5 MPH (5.6km/h) the draper belt shall run at $13 \times 3.5 = 45.5$ RPM.

If a shaft tachometer is available, set the rear draper - rear roller shaft speed at 73 RPM per 1 MPH of combine speed. For example:

when a combining speed of 5 MPH (8km/h) is selected the rear draper - rear roller shaft shall run at $73 \times 5 = 365$ RPM.

In general, maximum pick up speed for picking conditions shall be selected so that the swath is always pushed slightly ahead.

IMPORTANT: *The maximum front draper belt speed on a SwathMaster pickup should not exceed 104 RPM equivalent to a combine speed of 8 MPH. The maximum idler or drive rotor speed on a Rake-Up pickup should not exceed 88 RPM equivalent to a combine speed of 8 MPH. Over speeding the pick up may cause premature wear of drive components and minimize performance*

ATTENTION: **Do not over-speed pickup. Over-speeding pickup will cause premature wear of drive components and adversely affect pickup performance.**

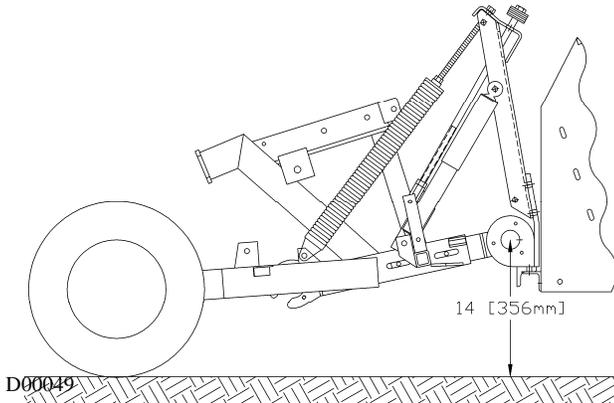
HEADER: The header is supplied with an auger drive sprocket to match your combine. In certain crops, a higher or slower auger speed may be desired. Contact your dealer for available sprocket options.

SECTION 5 – OPERATING INSTRUCTIONS

5.2 OPERATING HEIGHT

A) Header Operating Height

Lift the header until the center of the rear draper roller is 14" (356mm) above the ground. This is an appropriate header operating height.



Proper Header Height
(Rake-Up Shown)

B) Pickup Operating Height

Depending on field conditions, it may be necessary to either increase or decrease the amount of clearance between the teeth and the ground. Two general symptoms will indicate that this adjustment is necessary:

- The pickup leaves material unpicked in the field. This is an indication that the teeth are too high.
- The pickup teeth are wearing quickly or are picking up dirt and stones. This indicates that the teeth are set too low.

NOTE: After adjusting tooth height, the suspension system must be retuned for optimal performance. See Suspension Adjustment.

5.3 HOLDDOWN POSITIONING

Hold down position is important to the performance of the pickup and must be adjusted according to crop conditions. The spring wires on the front of the pick up are designed to keep the swath from forming a ball or rolling sideways in front of the teeth. Fiberglass rods hold the swath in contact with belts and guide the crop under the auger. Ideally, the spring wires should touch the top of the swath to keep it in contact with the pickup teeth. Constant down pressure on the crop will assist in pickup performance.

A) Hold down Height Adjustment

The hydraulic hold-down option allows you to fine tune the hold-down position using the combines reel height adjust.

NOTE: In the case of plugging the feeder house, raise the hold-down out of the way before using the reverser.



DANGER: Lower header to the ground or engage feeder house locks, shut-off combine, remove ignition key, and wait for parts to stop moving before performing this adjustment



Hydraulic Lift

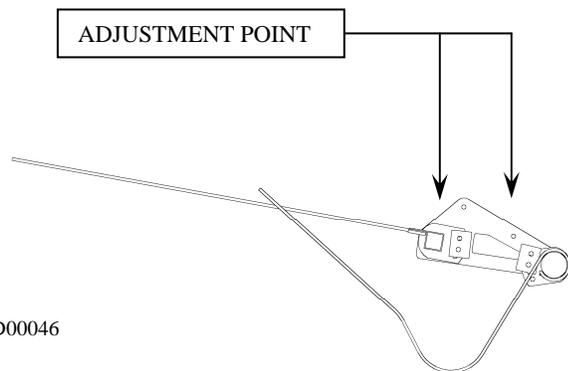
SECTION 5 – OPERATING INSTRUCTIONS

B) Hold-down Orientation

The spring wires and the fiberglass rods must be set properly for different crop and conditions.

- b) Remove the clevis and hitch pins and adjust the spring wire tube so that the spring wires protrude up through the fiberglass rods as illustrated. This will protect the fiberglass rods from becoming damaged by the spring wire edges.

NOTE: The purpose of the fiberglass rods is to provide a smooth, even flow of material under the auger and to the combine.



Spring Wire and Fiberglass Rod Adjustment



Hold-down Clevis and Hitch Pins

NOTE: To reduce shelling in heavy swaths, it may be necessary to rotate the spring wires completely out of the way.



Hold-down Adjusted for Short Crops



Hold-down Adjusted for Average Crops



Hold-down Adjusted for Heavy Crops

NOTE: In some cases, if the hold-down assembly is moved substantially the suspension should be retuned. Rotate the spring wires clear before continuing to operate.

SECTION 5 – OPERATING INSTRUCTIONS

5.4 **RADIAL PIN CLUTCH** (On all header drive shafts)

Every header is equipped with a driveshaft, which contains a radial pin clutch. This clutch emits a rattling sound and pulsating motion when slippage occurs.



Radial Pin Clutch

The purpose of this clutch is to provide protection against overload. When an obstruction encounters the auger and creates an overload, the clutch will slip notifying the operator of a problem. Frequent slippage for more than two or three seconds may result in clutch damage.

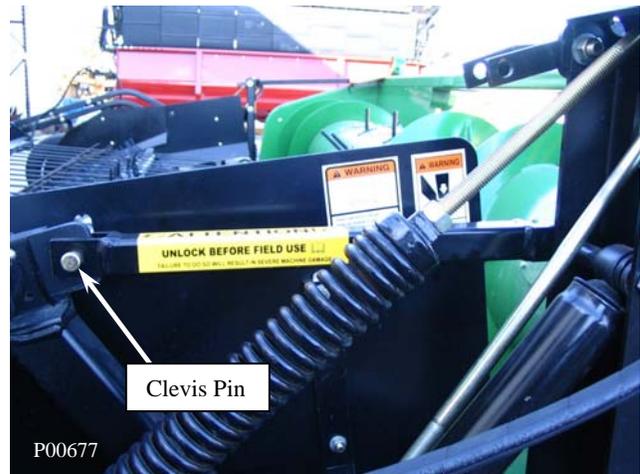
ATTENTION: Prolonged operation of the header with the clutch slipping will cause damage to the header and/or clutch.

5.5 **DISCONNECTING FROM COMBINE**

ATTENTION: Always lock the storage brace prior to disconnection. Failure to lock storage braces will result in difficulty reconnecting the header to the combine.

TIP: Engaged braces for long trips from field to field on rough terrain will prevent the pickup from bouncing.

- a) Remove the clevis pins from storage clevis.
- b) Pull storage braces downward out of storage brace holders and place in locking position.



Storage Brace - Engaged

- c) Reinstall the clevis pins in storage braces. To ease pin installation it may be necessary to slightly raise or push down on pickup wheel.
- d) Move unit to storage location.
- e) Disconnect all hydraulics and wiring between the header and combine. Some combine models use a multi function coupler that disconnects the hydraulics,

SECTION 5 – OPERATING INSTRUCTIONS

electrical wiring and feeder house locks simultaneously. The coupler is to be unlocked and stored in the storage bracket. Other models have a coupler system for the hydraulics and separate electrical harness connections.

- f) Remove the drive shaft from the feeder house and place it on the storage bracket.
- g) Engage the feeder house lock.
- h) Unlock the lower hookup points on header.
- i) Disengage the feeder house lock.
- j) Lower the feeder and slowly drive out of the feeder house opening of the header.

5.6 UNPLUGGING THE AUGER

Occasionally the auger may become plugged and will require unplugging.

To unplug feeder house or auger with combine reverser:

- a) Refer to your combine manual for operating instructions.
- b) Stop combine forward travel.
- c) Shut off pickup unit.
- d) Raise hold down all the way up.
- e) Engage reverse mode.

NOTE: To prevent damage to the pickup motor, DO NOT engage the feeder reverser for more than 5 seconds if the feeder and auger will not turn.

ATTENTION: Pickups cannot run in reverse. Any attempt to run pick up in reverse will seriously damage pick up and/or pick up motor.

SECTION 6 – MAINTENANCE/LUBRICATION

Read and follow all safety procedures in the beginning of the Operators manual.



WARNING: Take Extreme caution around escaping hydraulic fluid. Release all pressure in the system before servicing or inspecting leaking lines. Hydraulic fluid under high pressure can penetrate the skin and cause serious injury. Never use your hands to inspect lines. Seek immediate medical attention if fluid penetrates your skin.



DANGER: Lower header to the ground or engage feeder house locks, shut-off combine, remove ignition key, and wait for parts to stop moving before performing this procedure.

6.1 FIRST TIME USE – MAINTENANCE

- Inspect the wheel bolts for looseness. Torque after first 10 hours of use. (60 lb-ft)

6.2 DAILY MAINTENANCE / LUBRICATION (10 hours)

- Check tire pressure. The pressure should be 8 – 10 PSI. (55-69 kPa)
- Check for loose fasteners.
- Grease header drive shaft daily as per lubrication chart.
- Inspect teeth for straightness.
- Check SwathMaster Small Seed belt guides for wear.

6.3 WEEKLY MAINTENANCE / LUBRICATION (50 hours)

- Oil chain and sprockets with chain lube.
- Check header drive chain tension.
- Check wheel bolt tightness.
- Check draper belt tension.
- Inspect bearings and seals.

RAKE-UP

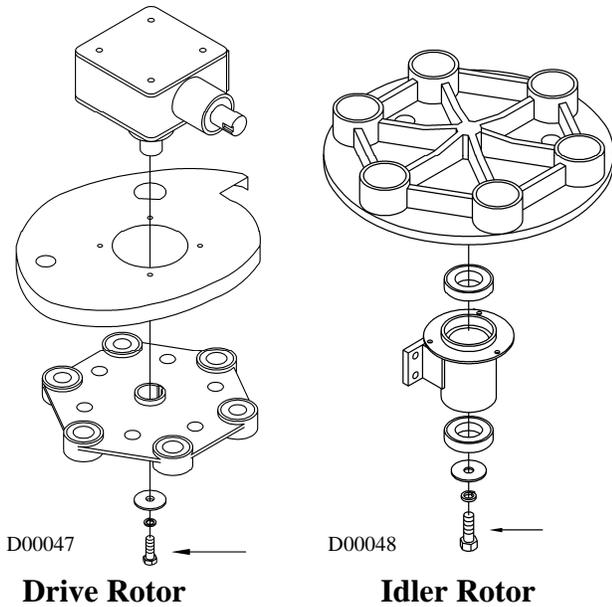
- Check that the pickup drive belt tensioner oscillates freely. Apply a spray lubricant to the idler arm pivot point.



- Check that the 1/2 inch x 1 1/2 inch UNC bolt that secures the drive rotor to the large gearbox is tight. Also, check that the 1/2-inch x 1 1/2 inch UNC bolt that secures the idler rotor to the frame is tight. These bolts may work loose even though they have been drilled and secured with wire.

NOTE: Neglecting to keep the idler and drive rotor retaining bolts tight can result in catastrophic failure of the pickup drive system. Failures of this nature are easily prevented with proper maintenance and as such are not covered by warranty.

SECTION 6 – MAINTENANCE/LUBRICATION

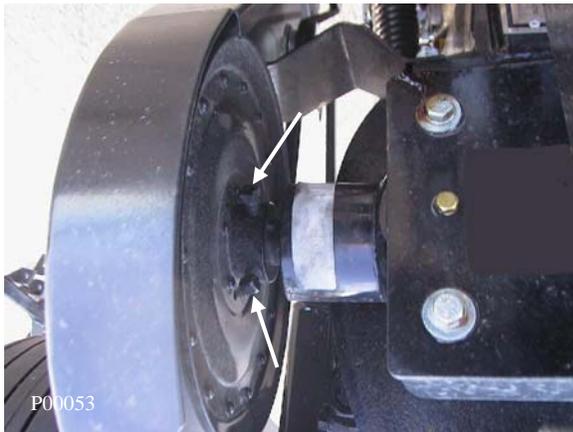


Drive Rotor

Idler Rotor

Rake-Up Attachment Bolts

- Check the setscrews for tightness on the main gearbox pulley.



P00053

Rake-Up Main Gear Box Pulley Set Screws

6.4 YEARLY MAINTENANCE / LUBRICATION (100 hours)

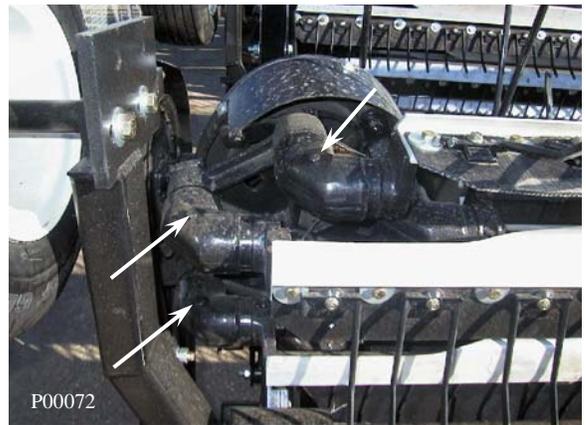
- Perform all daily and weekly procedures.

RAKE-UP & SWATHMASTER

- If pickup is equipped with the height control (AHC or AHHC), lubricate all height sensor pivot points seasonally.
- Check v-belt condition.

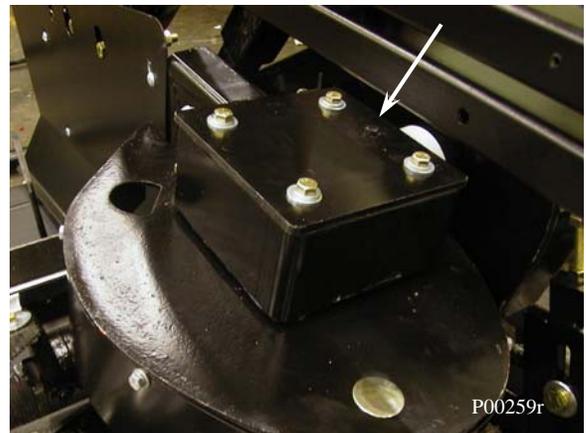
RAKE-UP

- The six small gearboxes at the drive end of the pickup require seasonal lubrication. Remove the pipe plugs and fill with NLGI Grade 000 extreme pressure, semi-fluid lithium grease, such as Mobilux EP 023, Petro-Can Precision XL EP000, or Chevron Dura-Lith EP000. With the header raised and secured, add grease until level with plug. Do one gearbox at a time then rotate the next one to the front.
- Inspect all gearboxes for signs of wear.



P00072

Small Gear Box Lubrication



P00259r

Main gearbox Plug

- The main gearbox is filled at the factory with 14.4 Fluid Oz (425 ml or 0.112 US gal) of NLGI Grade 000 extreme pressure, semi-fluid lithium grease, such as Mobilux EP 023, Petro-Can Precision XL EP000, or Chevron Dura-Lith EP000. Lower viscosity oils may leak out of the gearbox.

Continued next page...

SECTION 6 – MAINTENANCE/LUBRICATION

NOTE: To ensure that the proper amount of grease has been added, remove the plug and insert a wire into the hole. With the pickup in the field position the grease level should be 1 1/2" (38mm) below the lid of the gearbox.

HEADER

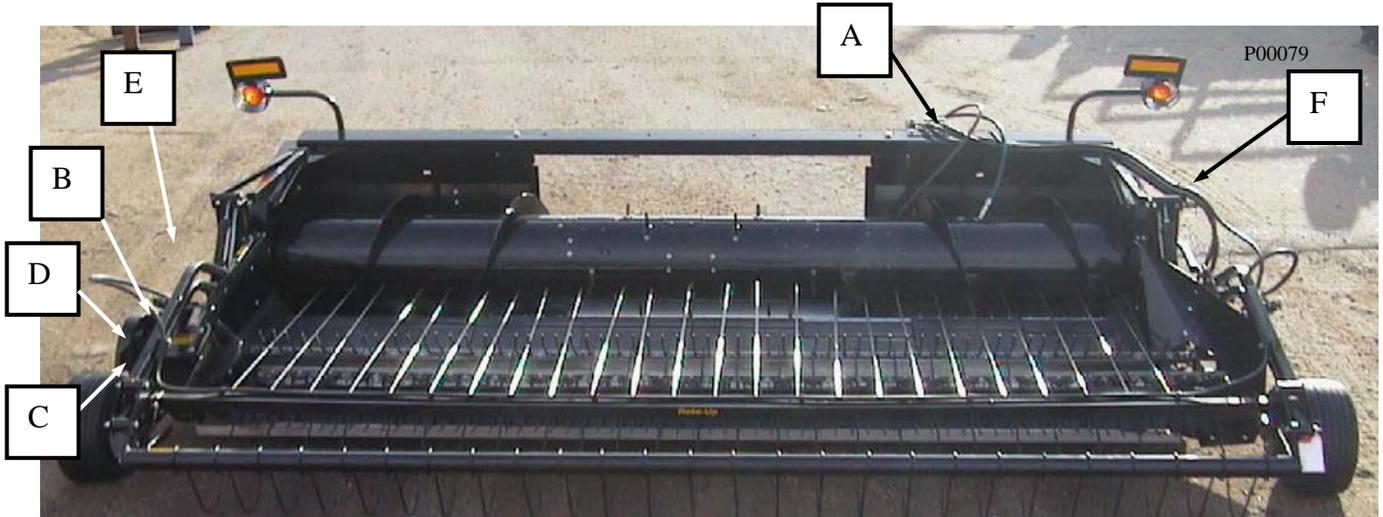
- Clean and grease the header drive shaft splines once a year. This will prevent excessive corrosion from forming.



Header Drive Shaft

SECTION 6 – MAINTENANCE/LUBRICATION

6.5 LUBRICATION POINTS



Rake-Up Lubrication Points

A – Drive Shaft

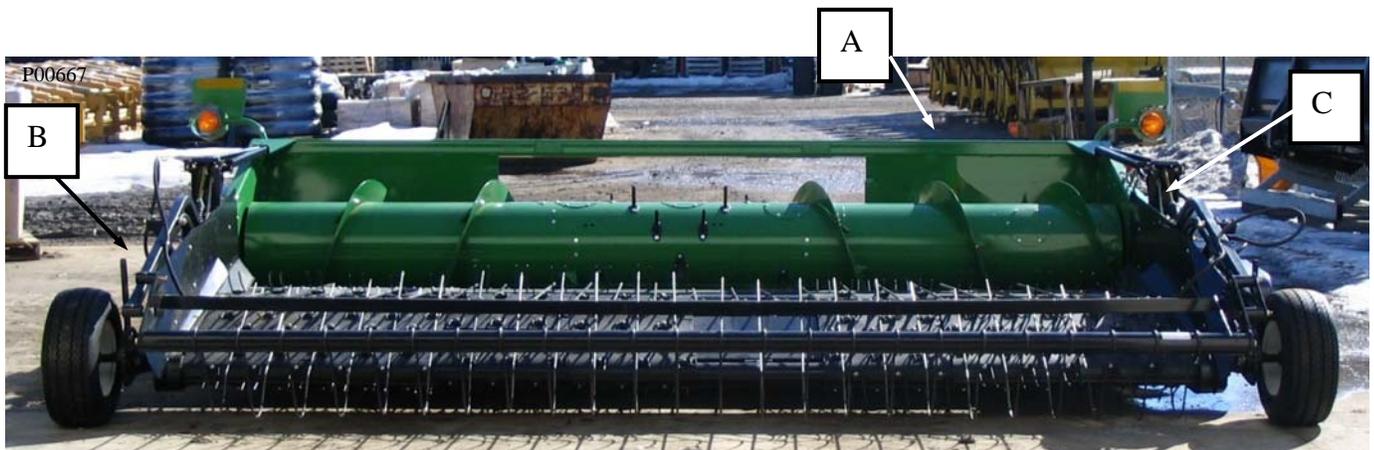
B – Six Small Gear Boxes (Mirror Model shown)

C – Main Gearbox (Mirror Model Shown)

D – Belt Tension Idler Arm

E – Height Control Sensor (If equipped)

F – Header Drive Chain and Sprocket



SwathMaster Lubrication Points

A – Drive Shaft

B – Height Control Sensor (If equipped)

C – Header Drive Chain & Sprocket

SECTION 6 – MAINTENANCE/LUBRICATION

6.6 MAINTENANCE / LUBRICATION CHART / GREASE SPEC

Read Maintenance/Lubrication Section for proper procedures. Use this chart as a quick reference only.

	Service to Perform	Frequency In Hours				
		Grease	Lubricate	Check	Clean	Change
1	Drive Shaft Splines	100			100	
2	Drive Shaft (Points A1, A3, A5)	50				
3	Drive Shaft Clutch	50				
4	Header Drive Chain & Sprocket		50			
5	Six Small Gear Boxes (Rake Up Only)			100		
6	Main Gear Box (Rake Up Only)			100		
7	Belt Tension Idler Arm (Rake Up Only)		50			
8	Tire Pressure *			100		
9	Loose Fasteners			10		
10	Hose Leaks			10		
11	Wheel Bolts			100		
12	Drive Chain Tension *			50		
13	Draper Belt Tension *			50		
14	Idler Rotor Bolt			50		
15	Drive Rotor Bolt			50		
16	Bearing Damage			100		
17	Teeth Wear			100		
18	Gear Box Wear			100		
19	Worn Paint Spots				100	
20	Cleaning of Units				100	
21	Wear Inspection			100		
22	Drive Shaft (Points A2, A4)	10				
23	Belt Guide (SwathMaster Grass Seed)			50		
24	Height Control Sensor Pivot Points			100		

* Check first 10 hours of operation, and then at regular chart intervals.

GREASE SPEC: Use SAE Multi-Purpose Grease per the following:

All locations except Driveline slip joints – High Temp. Extreme Pressure (EP2) Performance With 1% Max Molybdenum Disulphide (NLGI Grade 2). Lithium Base

Driveline slip joints – High Temp. Extreme Pressure (EP) Performance With 10% Max Molybdenum Disulphide (NLGI Grade 2). Lithium Base

GEAR LUBE (Rake-Up): NLGI Grade 000 extreme pressure, semi-fluid lithium grease, such as Mobilux EP 023, Petro-Can Precision XL EP000, or Chevron Dura-Lith EP000.

SECTION 7

SERVICE

7.1 ATTACHING PICKUP TO HEADER

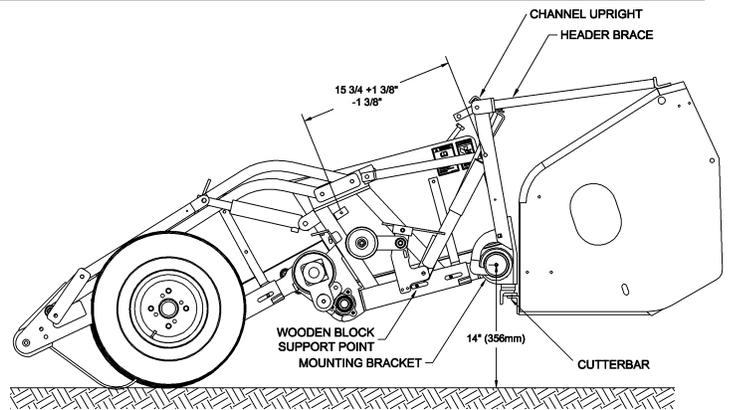


DANGER: Lower header to the ground or engage feeder house locks, shut-off combine, remove ignition key, and wait for parts to stop moving before servicing.

ATTENTION: Do not lift the header without the header braces properly installed. Attempting to lift the header without header braces will damage the pick up or header. Parts damaged due to improper handling are not covered by warranty.

Positioning on Header

- Support the pickup with the rear roller at approximately 14 inches (356mm) above the ground with wooden blocks located under the shock tubes. See following drawings.



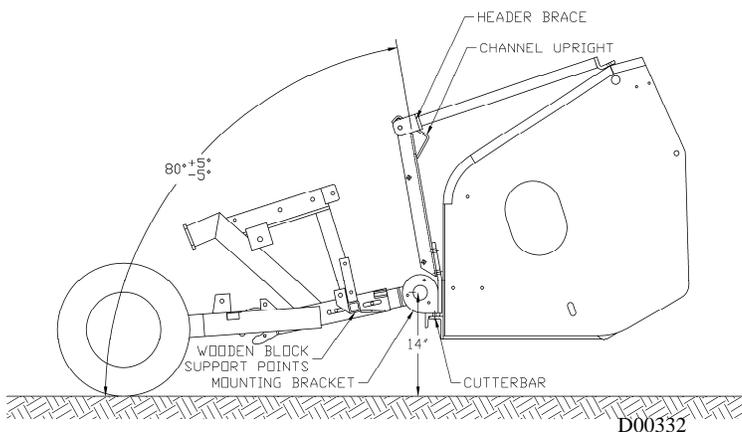
D00333A

Installing SwathMaster onto the Header

13 FT. HEADER: With the header mounted on the combine, position the header cutter bar under the pick up mounting bracket for 12ft pickups and above the mounting bracket for 14ft pick ups.

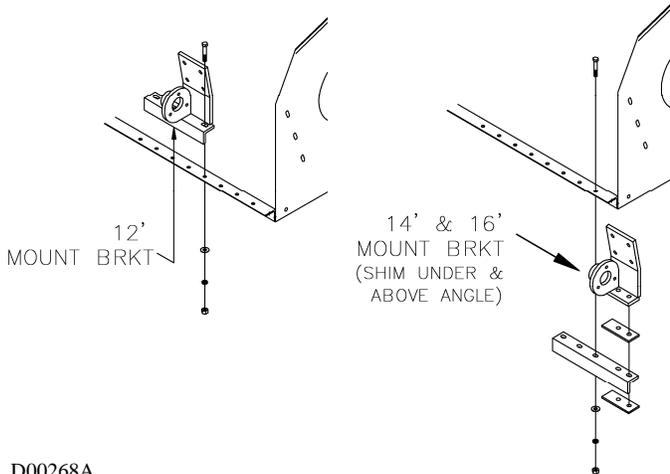
Position the header such that the left and right hand channel uprights on the pickup frame are equal distances from the sides of the header. On 14ft pick ups, the channel uprights are outside the header.

See illustrations next page.



D00332

Installing Rake-Up onto the Header

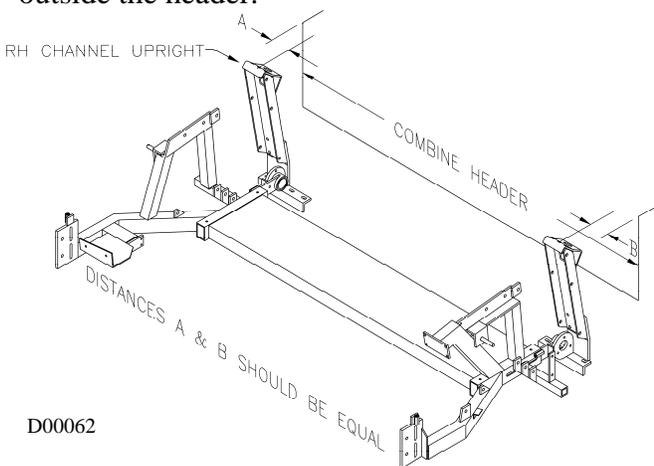


D00268A

Mount Bracket Orientation

15 FT. HEADER: With the header mounted on the combine, position the header cutter bar above mounting brackets for 16ft pick ups.

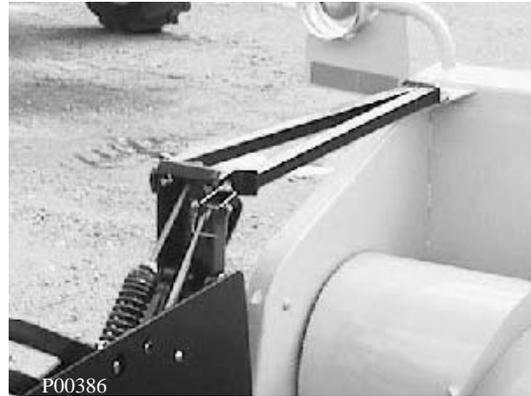
Position the header such that the left and right hand channel uprights on the pickup frame are equal distances from the sides of the header. On 16ft pick ups, the channel uprights are outside the header.



D00062

Centering the Rake-Up on the Header
(Rake-Up Frame not exactly as shown)

d) Loosely bolt the header braces to the channel uprights and the header sidewall.



Mounted Header Brace

e) Bolt the mounting brackets to the cutter bar using the 7/16-inch carriage bolts, spring lock washers, and nuts provided. There are three bolts for each side of the pickup. The clearance between the cutter bar and rear roller can be increased, if desired, by positioning the shim between the cutter bar and mount bracket. (True only for 14ft pick up on 13 ft. headers and 16ft pick up on 15 ft. headers.)

NOTE: It may be necessary to shift the pickup slightly off center to align the mounting bracket and the cutterbar with the holes.

f) Make sure mounting bracket is secure and flush to cutter bar. Tighten all header brace bolts. Lift the header and remove the wooden blocks.

7.2 OPENING HEADER SIDE PANELS

John Deere / Lexion / Agco:

To remove left panel, unscrew bolts and lift up on panel.



P00551

Left Hand Shield: John Deere / Lexion / Agco

To remove right panel unscrew bolts and pull away from header.

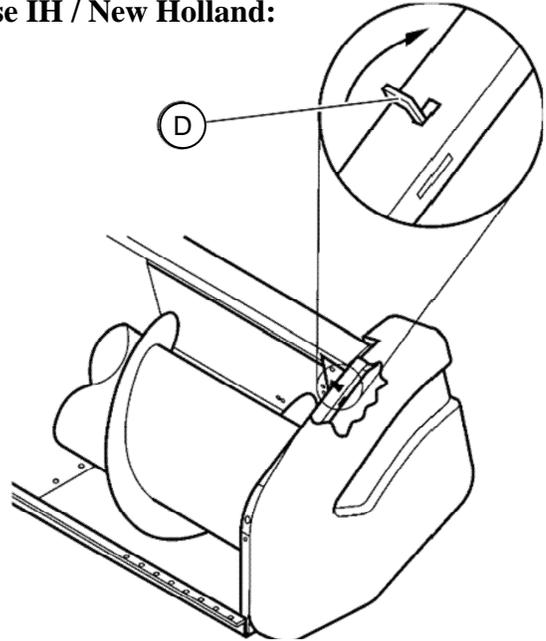


P00552

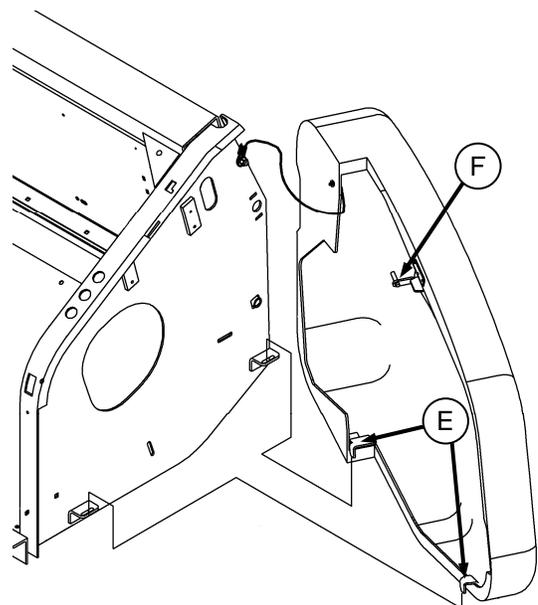
Right Hand Shield: John Deere/Lexion/Agco

NOTE: It is not necessary to remove panels to perform adjustments on units. See 4.11 Header Drive Chain Adjustment.

Case IH / New Holland:

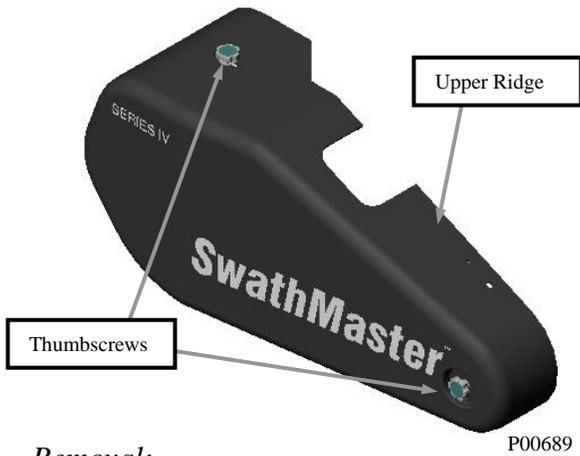


- a) To open shield, push release tab (D) towards rear of machine. Latch will release top of shield.
- b) Swing shield down and away from machine to allow enough room to lift it. Lift shield enough to disengage lower hooks and remove the shield.
- c) To close shield, engage shield hooks (E) in slots at bottom of frame.
- d) Swing shield up to engage upper tab latch mechanism (F).
- e) Close side panel until it is securely latched.



7.3 REMOVING PICKUP SHIELDS

SWATHMASTER

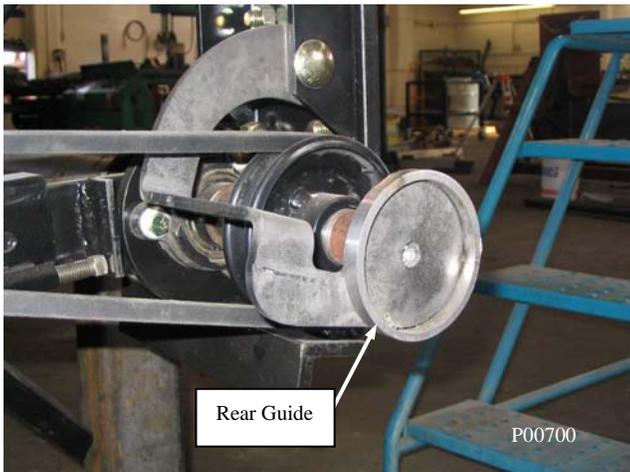


Removal:

- a) Unscrew the upper and side thumbscrews.
- b) Grabbing hold of the upper ridge, pull off the Shield.

Installation:

- a) Position the shield onto the brackets and slide back and forth until circular indentation falls into the rear guide.



- b) Tighten the thumbscrews.

RAKE-UP

Remove four 5/16" bolts and pertaining hardware.



Rake-Up Drive Shield Removal

7.4 HYDRAULIC SYSTEM



CAUTION: High-pressure hydraulic oil can cause serious injuries such as burns, cuts, and tissue damage! Always take precautions when working with hydraulic oil. Wear safety goggles, gloves and thick clothing. Seek immediate medical attention if cut or burnt.

ATTENTION: On some combine models, hydraulically driven after-market chaff spreaders are connected to the pickup drive hydraulic pump. When the pickup is sharing the drive with a chaff spreader, the pickup performance can be adversely affected or damage may occur to the hydraulic system. If the hydraulic motor on the pickup is mounted in series in front of the chaff spreader, backpressure from the chaff spreader may cause damage to the pickup motor. The pickup motor warranty is voided under these conditions.

SECTION 7 – SERVICE

NOTE: Swath Master units use the 101-1011 (MacDon #184266) orbit motor (ORB ports). Rake-Up units use 101-1010 (MacDon #184265) orbit motor (ORB ports). These motors perform well on most combines. On combines with less flow capacity the 101-1009 (MacDon #184264) orbit motor (ORB ports) may be required to increase pickup speed.

A) Hydraulic Motor Installation/Removal

RAKE-UP

Removal:

- a) Lower the pickup to the ground shut off combine and remove key.
- b) Remove the two hydraulic lines from the motor if the motor is being replaced or repaired. Be sure to have some rags and a bucket to catch the oil in the hoses.
- c) Remove all shields that will interfere with this procedure.
- d) Loosen the setscrew on the motor coupler.
- e) Extract the two flange head bolts until they contact the motor.
- f) Proceed to extract the bolts one revolution at a time until the motor is removed.
- g) Remove the two flange head bolts and place aside.
- h) Remove the two 1/4" hex head bolts and thread them into the previously removed flange head boltholes until they contact the hub.
- i) Rotate each bolt one revolution at a time until the hub releases.
- j) Remove the coupler and hub and / or pulley.

Installation:

- a) Install the coupler with hub or pulley onto the roller shaft. Be sure the coupler bottoms out with the end of the roller shaft.
- b) Lock into place with the 1/4" bolts and spring lock washers. When tightening the 1/4" bolts, alternate several times from one bolt to the other, until both bolts are equally secure. Return the 1/4" flange head bolts to their original location.
- c) Install the hydraulic motor with key into the hydraulic motor coupler and lock into place with the setscrews.

SWATHMASTER

Removal:

- a) Remove shield. See previous section.
- b) Disconnect hoses. Oil will leak from hoses upon disconnection.
- c) Remove v-belt. (See v-belt removal)
- d) Remove the 1/2" bolt, spring lock washer, retaining washer, and arm extension.
- e) Next step is Motor/Sheave removal. There are two methods of breaking hub away from the coupler.
 - D) Large chisel & hammer.
 - 1 Using 7/16" wrench or socket, remove the two 1/4" bolts and spring lock washers.
 2. Position a 1" or 1 1/4" chisel between the hub and sheave. Gently tap alternate sides until hub comes free. Do not contact the coupler-damage may occur.
 3. Taking hold of the sheave, give a sharp pull. The motor sheave and

SECTION 7 – SERVICE

coupler should come free. Use a rubber mallet if necessary. Do not lose the key.

II) 7/16" Wrench or Socket (slower)

1. Using a 7/16" wrench, remove the 1/4" bolts and thread them into the second set of holes in the hub until they contact the sheave.
 2. Turn each bolt a half turn at a time until the hub releases.
 3. Taking hold of the sheave, give a sharp pull. The motor sheave and coupler should come free. Use a rubber mallet if necessary. Do not lose the key.
- f) Flip the motor up on end with sheave upward.
- g) With rubber mallet, gently tap alternate sides of the sheave until it break free.
- h) Place a chisel in the slot of the coupler and slightly spread it open.
- i) Pull the motor off of the coupler. Do not lose the key.
- j) Remove the torque arm and hose fittings if replacing the motor.

Installation:

- a) Place the torque arm onto the motor and secure.
- b) Place the key in the slot of the roller shaft.
- c) Slide the hub onto the shaft-shouldered end first.
- d) Position the motor coupler onto the shaft while aligning the key with the slot. Tap on until it bottoms out.
- e) Loosely place the sheave onto the coupler.

- f) Slide the motor and torque arm into the coupler until it hits the roller shaft. Be sure the key and key way is aligned.
- g) With a rubber mallet tap the sheave onto the coupler until it is firmly seated.
- h) Place the 1/4" bolts into the non-threaded holes and align with the threaded holes on the sheave. Tighten until snug.
- i) Using a 7/16" wrench or socket, alternate tightening the bolts a bit at a time until a maximum torque of 9lb ft (11Nm) is achieved.
- j) Rotate torque arm to align with arm extension shaft. Install arm extension, retaining washer, bolt and hardware.
- k) If installing new motor, install hose fittings from previous motor.
- l) Install the v-belt onto the sheave and activate belt tensioner.
- m) Install hoses onto the motor and secure.
- n) Install shield.



Hydraulic Motor Installed

SECTION 7 – SERVICE

B) Hydraulic Cylinder(s) Replacement

The hold down employs a single-acting master and slave circuit for raising and lowering the hold down. The operation of the lift can be adversely affected by factors such as air in the system. It is suggested that the following procedure be used to ensure proper operation of the hold down when servicing the unit.

Removal/Installation Procedure

- a) Lower the hold down completely down, shut off combine and remove key.
- b) Release all hydraulic pressure in the system.
- c) Remove all hydraulic hoses from the cylinder(s) being removed. Be sure to have a container and rags to catch any escaping hydraulic oil.
- d) Remove the two hitch pins and washers that hold the cylinder on the pickup.
- e) With the help of a second individual who is slightly lifting up the hold down, pull off the cylinder and install the new one.

NOTE: There should be a washer on the outer sides of the cylinder.

- f) Install the washers and hitch pins.
- g) Complete Fitting Transfer/Installation if replacing cylinder.

Fitting Transfer/Installation

You will now have to either transfer the old fittings over from the removed cylinder or install the new fittings onto the new cylinder. The following will instruct you on the proper procedure:

Master Cylinder

- a) Remove the two 90-degree elbows and the orifice from the old master cylinder.
- b) Screw the orifice into the lower port of the master cylinder. Turn until the orifice bottoms out. Then screw one ORB/JIC 90 degree elbow into the lower port of the master cylinder. Continue screwing in the elbow until you feel a slight resistance then stop. Orient the elbow tip upward approximately 30 degrees outward and tighten the jam nut.
- c) Screw in the second ORB/JIC elbow into the upper port of the master cylinder until you feel a slight resistance then stop. Orient the tip of the elbow straight toward the cylinder rod and tighten the jam nut.
- d) Connect the hold down hose to the upper 90-degree elbow on the master cylinder. When tightening the hose ensure the hose goes up from the elbow and does not fall to the side.
- e) Connect the header hose to the lower 90-degree fitting on the master cylinder.



Master Cylinder

Note: The ports of the master and slave cylinders point downwards on a SwathMaster pickup and face upwards on a Rake-Up pickup.

SECTION 7 – SERVICE

Slave Cylinder

- a) Remove the 90-degree elbow and bleed plug from the old slave cylinder.
- b) Screw in the ORB bleed plug into the upper port of the slave cylinder. Tighten snug.
- c) Screw in the 90-degree ORB/JIC elbow into the lower port of the master cylinder until you feel a slight resistance then stop. Orient elbow tip toward the rod end of the cylinder and approximately 30 degrees outward and tighten the jam nut.
- d) Connect the hold down hose to the lower 90-degree elbow on the slave cylinder.



Slave Cylinder
(SwathMaster pickup shown)

NOTE: Testing is required after any servicing is done to the hold down hydraulic system Refer to Testing Hydraulic Hold down for procedure.

C) Hose Routing and Clamping

- Hold down hoses/steel lines run under and across the fiberglass rod flat bar between the cylinders. These require proper clamping and routing to avoid hose damage.

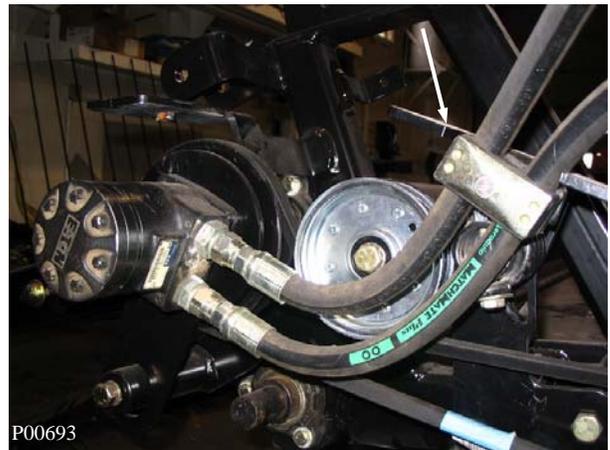


Properly Routed Hold down Hose

- The hoses from the hydraulic motor and cylinder running to the header also require proper clamping and orientation

SWATHMASTER

- SwathMaster hoses are secured to the idler bracket with a plastic hose clamp.



SwathMaster Hose Clamping

D) Pickup to Header Hydraulic Connections

- a) The pickup motor hoses connect to the steel lines secured to the header sidewall.
- b) The hold down hose is to be looped and connected to the 3/8 inch steel line on the header.

SECTION 7 – SERVICE

NOTE: The hose on the motor port closest to the header is the supply line and the hose furthest from the header is the return line.

Identification of the header lines is as follows:

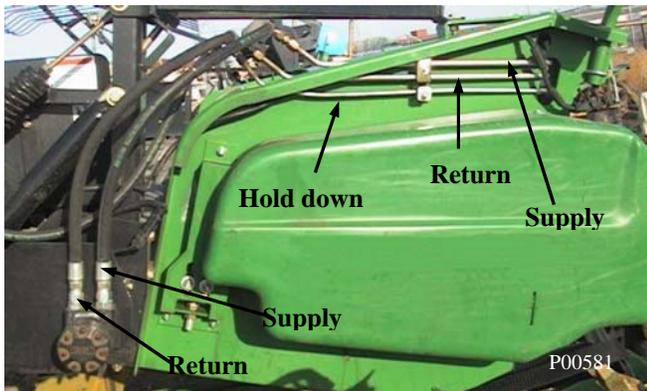
- Lower 3/8 inch line is the hydraulic hold down line
- Middle line is the motor return line
- Upper line is the supply line

NOTE: Hold down hose must have sufficient slack and be oriented properly to prevent damage.

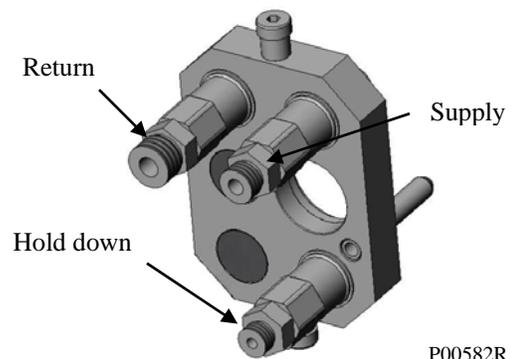
JOHN DEERE 60 SERIES MODELS



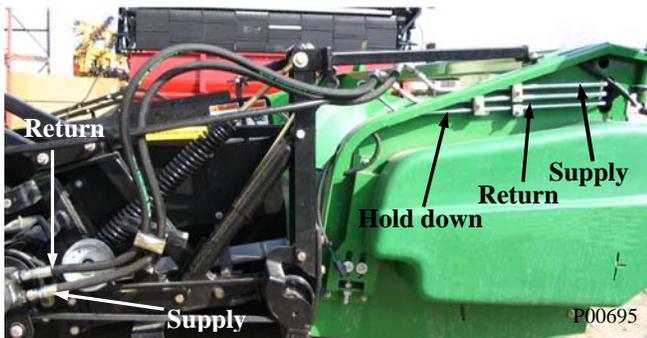
Hydraulic/Electrical Connection



Rake-Up Orientation



Orientation of Hydraulic Lines



SwathMaster Orientation

A. Coupler Removal and Installation:



- c) All steel lines are firmly mounted to the header wall with clamps.



Hose Clamping

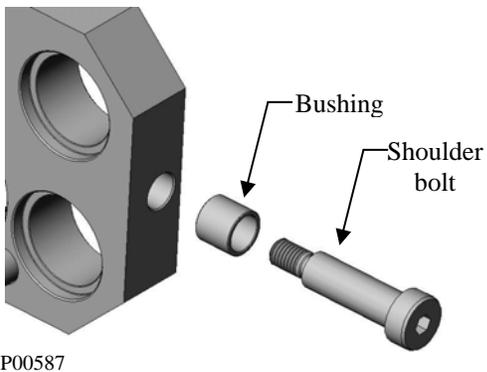
- 1) Remove snap ring.
- 2) Remove coupler.
- 3) Remove coupler fitting.
- 4) Install coupler fitting into new coupler.
- 5) Place coupler into the socket and replace snap ring.

B. Electrical Connector Removal and Installation



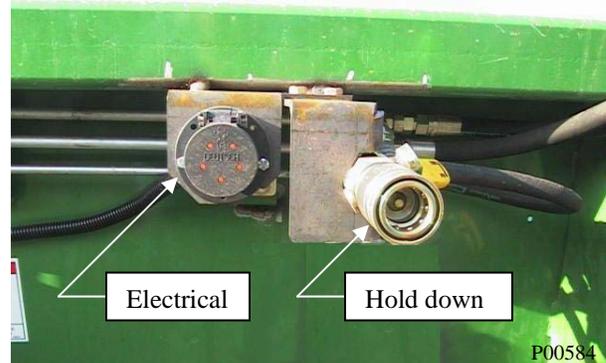
- 1) Remove snap ring.
- 2) Remove connector.
- 3) To install connector, reverse steps.

C. Removal and Replacement of Locking Bushings

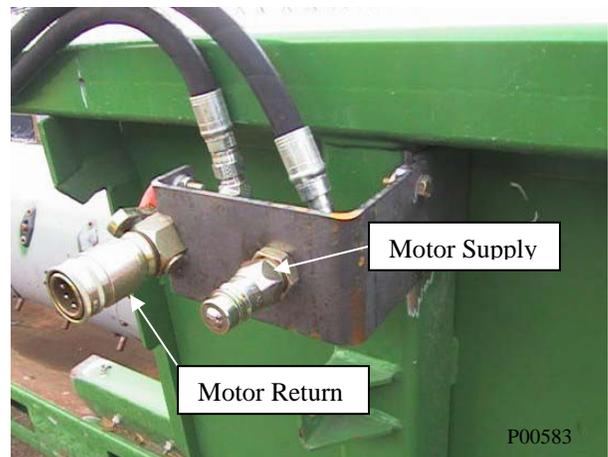


- 1) Unscrew shoulder bolt.
- 2) Remove and replace bushing.
- 3) Apply temporary thread locking compound to shoulder bolt thread. Tighten bolt to a torque of 30Nm.
- 4) Check bushing for free rotation.

JOHN DEERE 50 SERIES MODELS

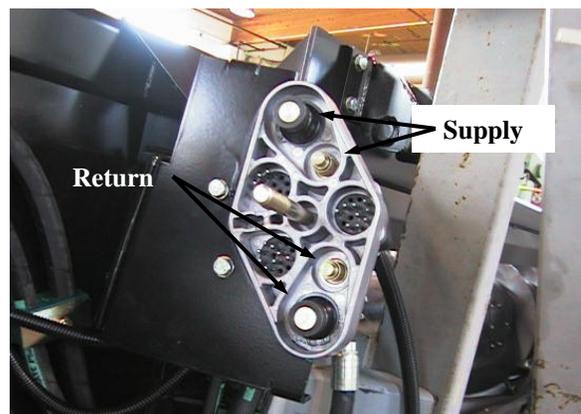


**Electrical and Hydraulic Connections
LH Side**



**Hydraulic Connections
RH Side**

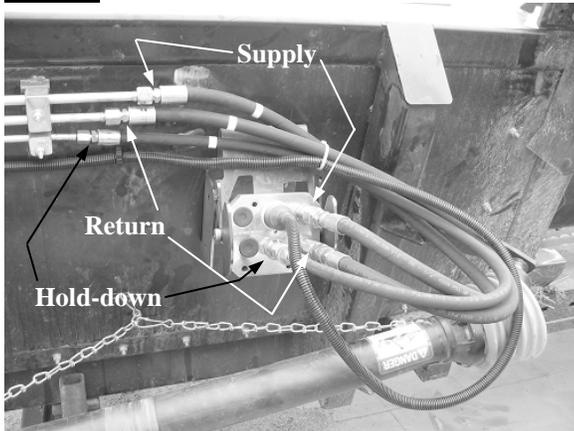
CLAAS / LEXION



Hydraulic/Electrical Connection
NOTE: When connecting/disconnecting hydraulic fittings two wrenches should be used.

SECTION 7 – SERVICE

AGCO



Hydraulic/Electrical Connection

E) Hydraulic Hold Down Troubleshooting

To correct uneven cylinder operation, follow the instructions in this section step by step to troubleshoot its operation.

Prior to troubleshooting the hydraulics, additional orifice should be obtained from your local dealer. The procedures below indicate adjustments to perform as needed.

Problem 1: Slave Cylinder Remains Extended More Than 1/2 inches (13mm) When the Hold down is Fully Lowered.

Probable Solution:

- Bleed Hydraulics
- a) Bleed the hydraulics as described in the bleed procedure.
 - b) Retry the hold down.
 - c) Check for improvement.
 - d) Repeat two or three times as necessary.

Problem 2: Master Cylinder Lags Behind Slave Cylinder on Descent and Jumps Ahead of Slave When Lifting.

Probable Solution(s):

- Remove Mechanical Obstruction
- Bleed Hydraulics
- Install Larger Orifice in Bottom of Master Cylinder.

Service Parts:

- 1/16 inch Orifice (Part # 01-10922-01)
 - 1/32 inch Orifice (Part # 01-10922-02)
- a) Check for a reason for mechanical binding.
 - b) Bleed the hydraulics as described in the Bleeding of Hydraulics.
 - c) Retry the hold down.
 - d) Check for improvement.
 - e) Repeat two times if required.

If this does not work, then replacing the orifice in the master cylinder may fix the problem.

- a) Loosen and remove the hose at the bottom of the master cylinder. Keep rags handy to clean up leaking hydraulic oil.
- b) Loosen and remove the elbow from the bottom of the master cylinder.
- c) Using a large bladed flat screwdriver, loosen and remove the orifice from inside the bottom port of the cylinder.
- d) Install the 1/16-inch orifice in the bottom port. Do not over tighten.
- e) Replace the elbow and the hose.
- f) Bleed the hydraulics as described in the Bleeding the Hydraulics.
- g) Repeat two or three times as needed.
- h) Check the overall operation of the hold down.

SECTION 7 – SERVICE

Installing the 1/16-inch diameter hole orifice will likely prevent the master cylinder from lagging.

F) Bleeding the Hydraulics

In order for the hydraulics to perform properly, all or most of the air must be removed from the system. The following procedure provides the easiest method of bleeding the hydraulics. The hydraulics should be bled after initial installation, if the unit has sat for a significant period of time, and if adjustments are needed to the hydraulics.



CAUTION: High-pressure hydraulic oil can cause serious injuries such as burns, cuts, and tissue damage! Always take precautions when working with hydraulic oil. Wear safety goggles, gloves and thick clothing. Seek immediate medical attention if cut or burnt.

- a) The hold down is controlled using the reel lift control located in the combine cab. Fully raise the hold down.
- b) Engage the hold down safety locks. Ensure that the lock is fully rotated over center so that it will not slip forward.
- c) Lower the hold down so that it comes to rest on the safety locks. (This serves to relieve the hydraulic pressure in the lines).
- d) Hold the plastic pail so the lip of the pail is underneath the bleed plug and so that a stream of oil shooting out of the plug will go into the pail.
- e) Loosen the small bleed screw on the end of the bleed plug with a 1/4-inch wrench.

- f) Have someone activate the hydraulics. The hold down may lift slightly and a stream of oil will come from the bleed screw.
- g) Run oil from the bleed screw until it is a steady clear stream. Have the operator stop activating the hydraulics and tighten the 1/4-inch bleed screw.
- h) Fully raise the hold down again.
- i) Disengage the safety locks.
- j) Lower the hold down.



Bleeding of Hydraulics

7.5 DRIVE SHAFT INSTALLATION



WARNING: DO NOT begin to perform any service procedure until combine is lowered to the ground or feeder house locks are engaged, combine is shut off, the key is removed and all moving parts have stopped.

The drive shaft is to be installed after the header/pickup is attached to combine. Installing the drive shaft requires the following steps:

- a) Engage the feeder house lock or lower the header completely down.
- b) Shut off engine and remove the key from the ignition.
- c) Take the clutch end of the drive shaft, pull back the locking plate and slide it onto the drive shaft of the header
- d) Release the locking plate and continue sliding it on to the header shaft until it clicks into place. Pull back to ensure that drive shaft is locked into place.



Drive Shaft to Header Installation
(Illustration May Differ)

- e) Take the opposite end of the drive shaft, pull on the quick disconnect slide collar and slide it onto the shaft of the combine.
- f) Release the collar and continue sliding it onto the combine shaft until the yoke locks into place. Pull back to ensure that drive shaft is locked.



Drive Shaft to Header Installation
(Illustration May Differ)

- g) Attach both drive shield chains together.
- h) Take the single chain clip and attach to back of header.

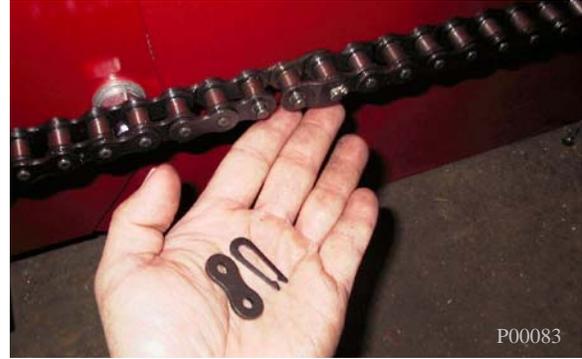


Chain Clip Attachment

NOTE: After removing drive shaft from the combine be sure to place it onto the storage bracket. See following photos.



Drive Shaft Storage Bracket
(Photo may vary according to model)



Drive Chain Links

B) Chain Installation

- a) Seat the chain on the sprockets. Install the drive chain and connecting links.
- b) Set the chain tension. See Header Drive Chain Adjustment for proper procedure.

NOTE: Check and adjust, if necessary, chain tension after first 3 hours of operation, every time new chain is installed

NOTE: The spring clip connectors must be assembled into the chain so that the closed end of the clip is facing the direction of travel.

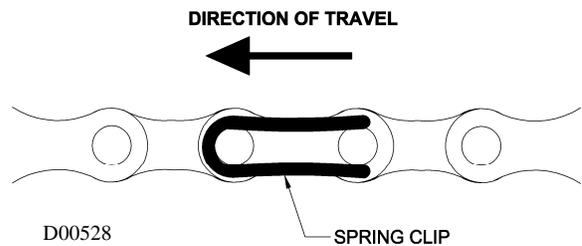
7.6 REPLACING HEADER DRIVE CHAIN SPROCKETS



WARNING: Make sure the combine; header is lowered or feeder house locks are engaged, the combine is shut off, the key is removed and all moving parts have stopped before performing this procedure.

A) Chain Removal

- a) Remove left shield. See Opening Header Side Panels.
- b) Release the tension in the chain. See Header Drive Chain Adjustment.
- c) Remove the connecting link in the chain and take off the chain.



Spring Clip Connectors

SECTION 7 – SERVICE

C) Large Sprocket Removal

- a) Remove the cotter pin, thrust washer and 1-1/8 inch castle nut from the large sprocket shaft.
- b) Remove the two M12 bolts from the sprocket.
- c) Remove the sprocket. A puller may be required to aid in the removal.
- d) Clean and inspect components. Replace any worn or damaged parts.

D) Large Sprocket Installation

- a) Apply a coating of anti-seize compound to the drive shaft and sprocket splines.
- b) Place the sprocket onto the drive shaft.
- c) Install the thrust washer and castle nut. Tighten until sprocket has slid on as far as it can go and the bearing is properly sandwiched between the sprocket hub and shaft shoulder. A torque of 55-65 Nm (41ft-lb – 48ft-lb) should achieve this. Back off castle nut a little.
- d) Install the M12 bolts through the sprocket and secure with the M12 U-nuts. Torque to 125-150 Nm (93ft-lb – 112ft-lb).
- e) Torque the castle nut 360-400 Nm (265-295 ft-lb).
- f) Install the cotter pin and bend end around nut. If the castle nut hole does not align up with the shaft hole tighten until alignment is achieved. DO NOT loosen the nut to achieve alignment.

E) Small Sprocket Removal

- a) Remove the cotter pin, shim(s), washer and M12 castle nut from the small sprocket shaft.

- b) Remove the sprocket. A puller may be required to aid in the removal.
- c) Clean and inspect components. Replace any worn or damaged parts.

NOTE: Take note of the location of the spacer and number of shims if or when removing them from the shaft.

F) Small Sprocket Installation

- a) Apply a coating of anti-seize compound to the drive shaft and sprocket splines.
- b) Install the spacer and shim(s) back onto the shaft. Be sure to refer to the note in the removal procedure.
- c) Install the new sprocket onto the shaft.

NOTE: Set screws are not required for this connection.

- d) Align the small sprocket with the large sprocket. The maximum tolerance is $\pm 1.5\text{mm}$ (1/16 inch). If adjustment is required use the shims located in front of the sprocket. Place any unused shims back between the sprocket and washer for future use.

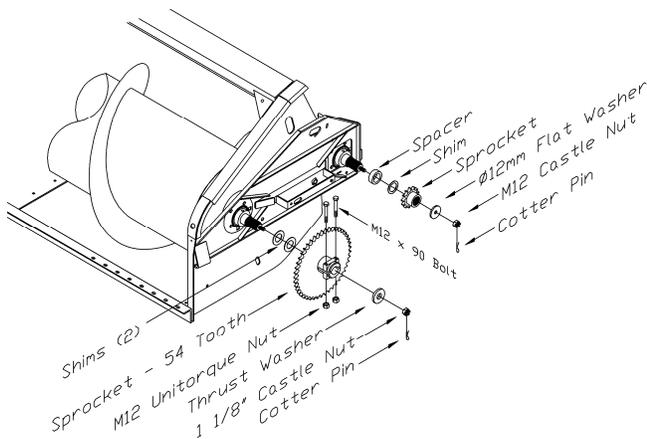
NOTE: Removal or installation of additional shims may be required to achieve alignment.

- e) Place the additional shims, washer and M12 castle nut onto the shaft and torque to 55-65 Nm (41ft-lb – 48ft-lb).
- g) Install the cotter pin and bend end around nut. If the castle nut hole does not align up with the shaft hole tighten until alignment is achieved. DO NOT loosen the nut to achieve alignment.

7.7 REPLACING AUGER FINGERS



Header Drive Chain



Sprocket Details

D00328

NOTE: The shim quantity and placement may not be as shown. Take note to ensure proper orientation of shims if removal is necessary.

NOTE: Chain tension must be checked and adjusted after the first 3 hours of operation, and at regular intervals.



WARNING: DO NOT attempt any service procedure until combine is lowered to the ground or feeder house locks are engaged, combine is shut off, the key is removed and all moving parts have stopped.

The following procedure will guide you in the removal/installation process of an auger finger:

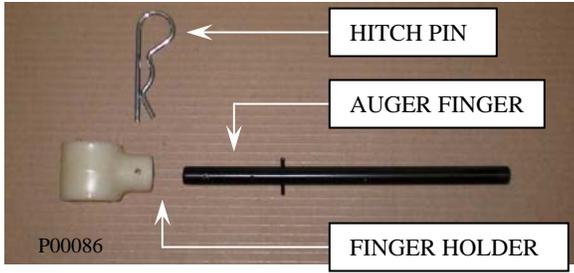
- a) Disconnect drive shaft from combine and place it on the storage bracket.
- b) Remove the M6 Hex Head Bolt on the hand hole cover closest to the finger (s) being serviced.
- c) Rotate the auger by hand until the damaged finger is placed in the most convenient position.
- d) Remove the finger holder hitch pin.
- e) Remove old finger and replace with new one.

NOTE: The new finger will have to be inserted through the hand hole cover and through the finger guide.

- f) Install hitch pin in same position as it was before servicing to prevent interference.
- g) Install hand hole cover and the bolts.



Auger Finger Replacement



Auger Finger Components

7.8 REPLACING TEETH



WARNING: DO NOT begin to perform any service procedure until combine is lowered to the ground or feeder house locks are engaged, combine is shut off, the key is removed and all moving parts have stopped.

NOTE: It may be necessary to remove the draper belt when replacing the teeth. Refer to “Replacing Draper Belts” for instructions.

If any of the teeth break or wear down enough to affect the performance of the machine, the tooth should be replaced. Excessively worn teeth will reduce picking efficiency resulting in losses far exceeding the cost of new teeth.

- a) Remove the 1/4 inch flange nut used to affix the teeth to the finger belt.
- b) Remove the tooth and replace.
- c) Tighten the 1/4 inch flange nut. The nut should be tightened just so that the tooth cannot be moved by hand.

7.9 REPLACING DRAPER BELTS

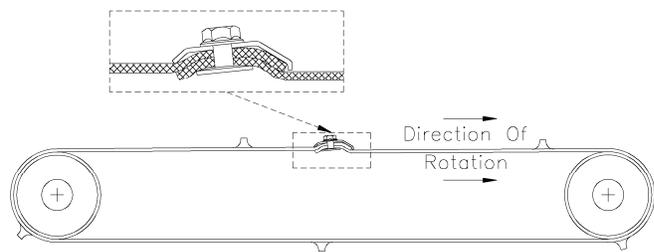


WARNING: DO NOT begin to perform any service procedure until combine is lowered to the ground or feeder house locks are engaged, combine is shut off, the key is removed and all moving parts have stopped.

- a) Relax the belt tension as described in the “Draper Belt Tensioning” and “Roller Support Adjustment (if applicable)”.
- b) Remove the 1/4 inch flange nuts, belt edge protector and 1/4 inch three prong elevator bolts and remove the belt.

NOTE: Note that the 1/2-inch carrier bracket bolts must be loosened to perform this adjustment.

- c) Wrap the new belt, cleats outward, around the rollers of the frame pan. The arrow on the belt should be pointing in the direction of rotation.
- d) Join the belt using the 1/4-inch three prong elevator bolts, belt edge protector, and 1/4 inch flange nuts. (Bolt Torque 45-50 in-lb, 5-6NM)



Properly Joined Draper Belt

- e) Tension the belts as described in Draper Belt Tensioning.

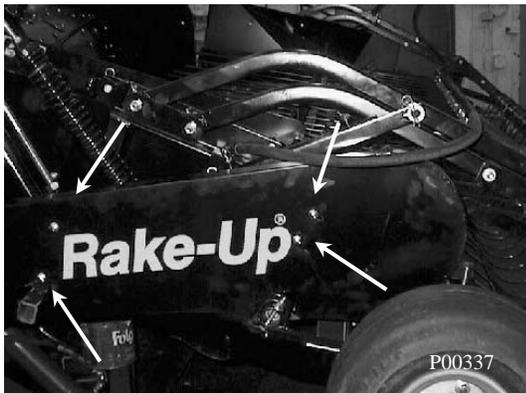
7.10 REPLACING DRIVE BELT



WARNING: DO NOT begin to perform any service procedure until combine is lowered to the ground or feeder house locks are engaged, combine is shut off, the key is removed and all moving parts have stopped.

RAKE-UP

- a) Remove the belt shield (four bolts).
- b) Placing a wrench or socket on the spring loaded idler pulley, push down on the arm to relieve the belt tension.
- c) Remove and replace belt.
- d) Reinstall the belt guard.



Rake-Up Shield



Rake-Up Drive Belt

SWATHMASTER



SwathMaster Drive Belt

- a) Remove shield. See “Shield Removal”
- b) Using a 3/4” wrench, on the spring-loaded idler, lift up to remove belt tension from the sheaves.
- c) Remove 1/2” bolt and hardware securing the lower portion of the torque arm and place aside.
- d) Remove the two hoses on the hydraulic motor. Be sure to catch seeping oil.
- e) Remove belt and install new one. It may be necessary to slacken the rear draper belts to get a new belt on. See “Draper Belt Tension”
- f) Allow idler to apply belt tension.
- g) Install and secure arm extension and retaining.
- h) Install hoses to motor.
- i) Check belt alignment with pulleys/sheaves. Adjust where necessary.
- j) Replace shield.

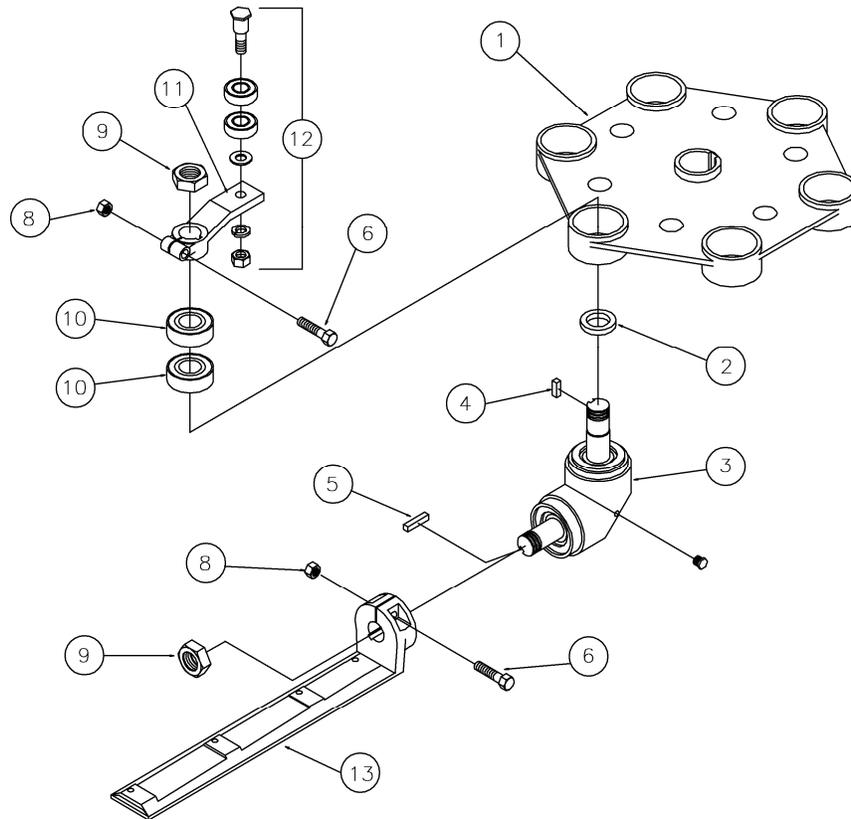
SECTION 7 – SERVICE

7.11 REPLACING SMALL GEAR BOX (Rake-Up Models)



DANGER: Lower header to the ground or engage feeder house locks, shut-off combine, remove ignition key, and wait for parts to stop moving before performing this procedure.

NOTE: Replacing the small gearbox requires a Special Gearbox Puller. (Part # 180784). Failure to use this specific tool during installation could damage the gearbox. The Special Gearbox Puller tool is available from your dealer.



D00044

- | | |
|-------------------------------|----------------------------|
| 1. Drive End Rotor | 8. 3/8 Inch Lock Nut |
| 2. Bushing | 9. 7/8 Jam Nut |
| 3. Small Gearbox | 10. Bearing |
| 4. 1/4 x 1/4 x 13/16 Inch Key | 11. Follower Arm |
| 5. 1/4 x 1/4 x 1 1/4 Inch Key | 12. Shoulder Bolt Assembly |
| 6. 3/8 x 1 1/2 Inch Bolt | 13. Finger Bar Arm |

If a small gearbox wears out it can be replaced as follows:

Special Tools Required:

- Gear Box Puller (Part # 180784)
- Torch

SECTION 7 – SERVICE

Removal Procedure:

- a) Raise the Hold down and engage hold down safety locks.
- b) Lower header/pickup completely to ground, shut of combine and remove key.
- c) Remove the four 5/16 inch x 3/4-inch bolts securing drive belt shield and place shield aside.
- d) Remove the drive belt.
- e) Detach the scroll plate guard by removing the 1/4-inch x 1/2-inch bolts, and washers.
- f) Remove the 5/16-inch x 1-inch bolts and washers securing the finger bar to the idler and drive arms. Place the finger bar aside.
- g) Remove the plug in the scroll plate.
- h) Rotate the main gearbox pulley until the shoulder bolt is centered in the small hole in the scroll plate.
- i) Remove the shoulder bolt, two bearings, flat washer, spring lock washer and nut from the follower arm.
- j) Remove the 3/8-inch x 1 1/2 inch bolt and nut clamping the follower arm to the small gearbox shaft.
- k) Rotate the drive rotor so that the shaft of the gearbox being removed is centered in the large scroll plate hole.
- l) Heat the small gearbox jam nut with a propane torch until a yellow flame appears. This will indicate that the permanent thread-locking compound is burned out.
- m) Remove the 7/8-inch jam nut securing the small gearbox to the drive end rotor.
- n) Drive the small gearbox and finger bar drive arm out of the drive end rotor. The follower arm and key will also release. Be careful not to damage the drive rotor bearings.
- o) Inspect the bearings in the drive end rotor for damage or wear. Replace if necessary.
- p) Heat the 7/8-inch jam nut securing the finger bar arm to the gearbox until a yellow flame appears. This will indicate that the permanent thread-locking compound is burned out. Remove the nut.
- q) Remove the 3/8-inch x 1 1/2 inch bolt and detach the finger bar arm from the small gearbox. Be sure not to lose the key.

Installation Procedure:

- a) Place the finger bar idler arm on to the new gearbox.
- b) Reinstall the key, 3/8 UNC x 1 1/2 inch bolt and nut into the finger bar idler arm.
- c) Apply permanent thread locking compound and tighten the 7/8-inch jam nut securing the finger bar idler arm to the gearbox.
- d) Rotate the drive end rotor until the gearbox being replaced can be seen through the half circle hole in the scroll plate.



WARNING: Always use heat protective gloves to prevent burning your hands when handling hot materials. Remove all combustible materials from the vicinity of an open flame. Have a fire extinguisher nearby.

SECTION 7 – SERVICE

- e) Place the longer shaft of the gearbox through the drive end rotor and attach the special gearbox puller to the shaft.

NOTE: DO NOT pull the shaft through completely or the follower arm will not be able to be installed. Follow step (f). Attempting to drive the gearbox out for arm installation may result in gearbox damage.

- f) Pull the shaft approximately 1 inch in. Remove the puller.
- g) Install the follower arm and key onto the shaft of the small gearbox. Orient the follower arm offset toward the scroll plate.
- h) Apply permanent thread locking compound and tighten the 7/8-inch jam nut. The 7/8-inch jam nut will pull the gearbox into its permanent position.
- i) Install and tighten the 3/8-inch x 1 1/2 inch bolt, and lock nut on the follower arm.
- j) Rotate the drive end rotor until the follower arm on the new gearbox is centered in the small hole in the scroll plate.
- k) Install the flat washer, two bearings, shoulder bolt, spring lock washer and nut to the follower arm. See drawing for proper orientation.
- l) Install the scroll plate plug.
- m) Install the finger bar and apply permanent thread locking compound to the 5/16-inch x 1-inch bolts that are used to secure the finger bar to the finger bar idler arm. Snug the bolts to the finger bar arms.
- n) Rotate by hand the drive end rotor one complete revolution. This is to ensure that the finger bars are seated properly.

- o) Tighten the four remaining finger arm bolts.
- p) Install the scroll plate guard.
- q) Install the drive belt.
- r) Install the drive belt guard.
- s) Check gearbox lubrication level. Add NLGI Grade 000 extreme pressure, semi-fluid lithium grease, such as Mobilux EP 023, Petro-Can Precision XL EP000, or Chevron Dura-Lith EP000 as required.

Follow steps (g-o) in removal procedure and (a-p) in installation procedure for each gearbox to be replaced.

NOTE: Occasionally during installation of the gearboxes, the gears may bind. However, after the 7/8-inch jam nuts have been tightened, the gearbox will operate correctly.



Special Tool Gearbox Puller - Part # 180784



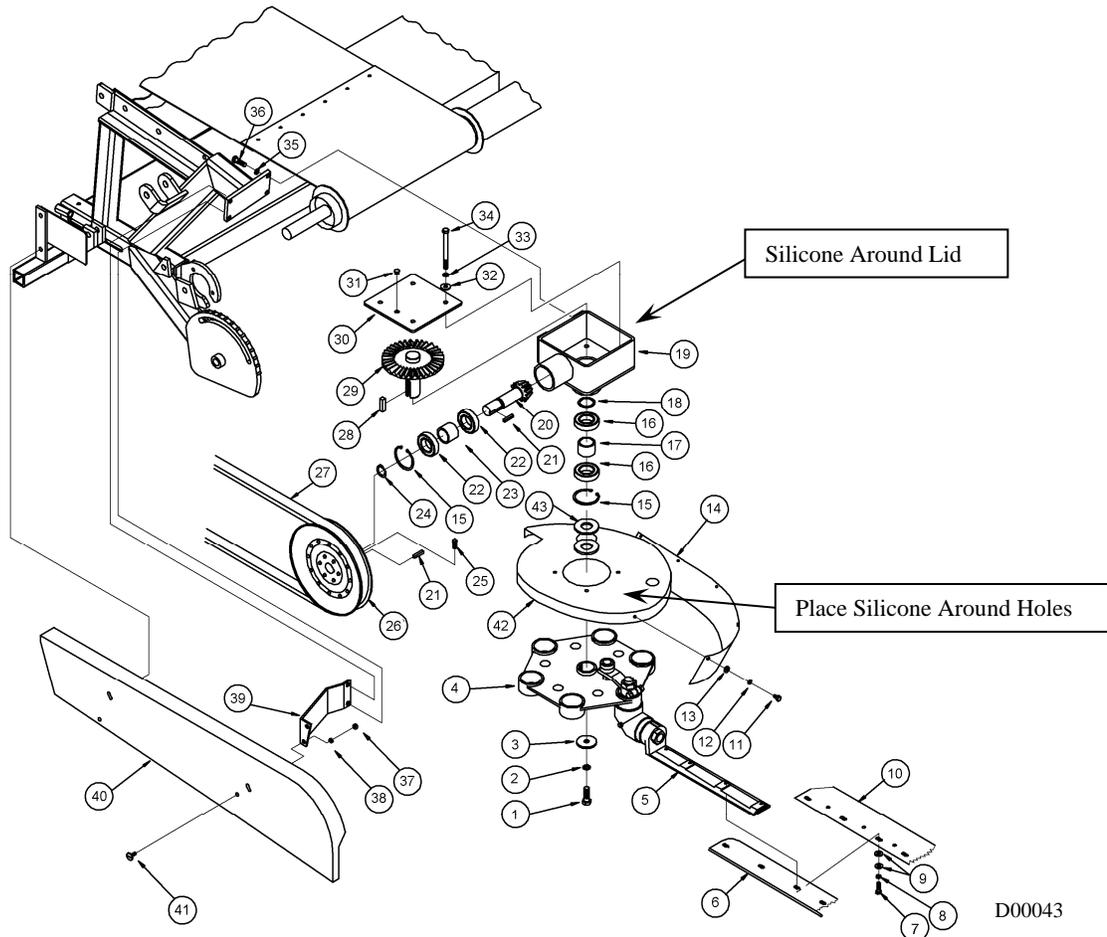
Puller on Gearbox

SECTION 7 – SERVICE

7.12 CROWN AND/OR PINION GEAR REMOVAL/INSTALLATION (Rake-Up Models)



DANGER: Lower header to the ground or engage feeder house locks, shut-off combine, remove ignition key, and wait for parts to stop moving before performing this procedure.



D00043

- | | | | |
|------------------------------|----------------------------|-----------------------------|-----------------------------|
| 1. Drilled Bolt, 1/2"x1-1/2" | 12. Spring Lock Washer, M6 | 23. Long Input Spacer | 34. Bolt, 3/8"x4-1/2" |
| 2. Spring Lock Washer, M12: | 13. Flat Washer, 1/4" | 24. External Snap Ring | 35. Spring Lock Washer, M10 |
| 3. Washer, 2"x17/32"x3/16" | 14. Scroll Plate Guard | 25. Set Screw | 36. Bolt, 3/8"x1-1/4" |
| 4. Drive End Rotor | 15. Internal Snap Ring | 26. Drive Pulley | 37. Nut, 5/16" |
| 5. Finger Bar Drive Arm | 16. Bearing, 6007 | 27. Drive Belt | 38. Spring Lock Washer, M8 |
| 6. Finger Bar | 17. Output Spacer | 28. Key, 3/8"x3/8"x1-1/2" | 39. Belt Guard Bracket |
| 7. Bolt, 5/16"x1" | 18. Bushing, #16 | 29. Crown Gear | 40. Belt Guard |
| 8. Spring Lock Washer, M8 | 19. Main Gearbox Housing | 30. Main Gearbox Cover | 41. Truss Bolt, 5/16"x3/4" |
| 9. Fender Washer, 3/8" | 20. Pinion Gear | 31. Grease Plug | 42. Scroll Plate |
| 10. Finger Bar Belt | 21. Key, 1/4"x1/4"x1-1/4" | 32. Flat Washer, 3/8" | 43. Spacers |
| 11. Bolt, 1/4"x1/2" | 22. Bearing, 6206 | 33. Spring Lock Washer, M10 | |

Tools/Materials Required:

- Snap Ring Pliers
- Silicone
- NLGI Grade 000 extreme pressure, semi-fluid lithium grease, such as Mobilux EP 023, Petro-Can Precision XL EP000, or Chevron Dura-Lith EP000 (14.4 Fluid Oz.)

SECTION 7 – SERVICE

A) Removal Procedure

Refer to the drawing at the beginning of this section for part reference.

- a) Raise the hold down up and engage the hold down locks.
- b) Lower header/pickup completely to ground, shut of combine, and remove key.
- c) Remove the four 5/16 inch x 3/4-inch bolts securing drive belt shield and place aside.
- d) Remove the drive belt.
- e) Loosen pulley set screws, and remove the pulley. Do not lose the key.
- f) Remove the 5/16-inch x 1-inch bolts securing the finger bars to the idler and drive rotors, and remove finger bars.
- g) Mark the scroll plate with an arrow showing the direction of rotation.
- h) Remove the four 3/8 inch x 1 1/4 inch bolts attaching the main gearbox to the main frame. Remove the two on the pinion side first so that the belt guard bracket could be removed and placed out of the way.
- i) Remove and place the detached drive gearbox unit in a spacious work area.
- j) Detach the scroll plate guard by removing the 1/4-inch x 1/2-inch bolts, and washers.
- k) Flip the gearbox unit upside down and remove the wire that secures the drive rotor attachment bolt to the drive end rotor.
- l) Remove the 1/2-inch x 1 1/2 inch drive rotor attachment bolt, flat washer, and M12 spring lock washer from the drive rotor.
- m) Press the crown gear shaft out of the drive end rotor. This will separate the drive end rotor from the scroll plate and main gearbox housing. Do not lose the key & spacers.
- n) Flip the gearbox over and remove the 3/8-inch x 4 1/2 inch bolts, flat washers, and M10 spring lock washers attaching the square gearbox cover and scroll plate to the gearbox housing. Remove the cover, scroll plate, and place aside.
- o) Flush out all existing grease from the gearbox housing.
- p) Remove the internal snap ring from the gearbox pinion housing.
- q) Drive out the pinion gear, complete with bearing and spacer from the pinion-bearing cup.
- r) Inspect pinion bearings for free and smooth rotation, and bearing seals for dents and damages. Replace bearings if necessary. See Pinion Bearing Removal below.
- s) Press out the crown gear.
- t) Inspect crown bearings for free and smooth rotation, and bearing seals for dents and damages. Replace bearings if necessary. See Crown Bearing Removal below.



CAUTION: The gearbox assembly is heavy. Provide proper support prior to removing the four bolts attaching the gearbox to the frame. Keep all body parts away from any potentially hazardous areas.

SECTION 7 – SERVICE

- u) Clean the gearbox housing lid area, between gearbox and scroll plate, of silicon or any other gasket material.

Pinion Gear Bearing Removal:

- a) Remove the external snap ring from the pinion gear shaft.
- b) Remove the bearings and bushing from the pinion gear shaft.

Crown Gear Bearing Removal:

- a) Remove the internal snap ring in the crown gear gearbox shaft.
- b) Press out the bushing, two bearings and output spacer from the main gearbox housing.

B) Installation Procedure

Refer to the drawing at the beginning of this section for part orientation.

NOTE: If crown gear bearings are being replaced perform the Crown Gear Bearing Replacement procedure at the end of this section before continuing.

- a) Place #16 mechanical bushing on the crown gear shaft.
- b) Press the crown gear through the crown gear bearings until the gear bottoms out.

NOTE: If you are replacing the pinion gear or pinion gear bearings refer to the Pinion Gear Bearing Replacement procedure at the end of this section.

- c) Press the pinion gear with the 2 bearings, long input spacer, and snap ring into the shaft of the pinion gear until the bearings meet the shoulder on the main gearbox.

- d) Install the (large) 244 Internal Snap Ring into the gearbox housing.

- e) Turn the shafts with your hand to ensure proper alignment and prevent gear binding.

- f) Apply approximately a 1/8 inch bead of silicone around the four boltholes on the scroll plate, than place the main gearbox in position for bolting onto the scroll plate. See the orientation drawing at the beginning of this section for reference.

- g) Apply approximately 1/8 inch of silicone to the main gearbox housing lid and place onto gearbox housing.

- h) Install and tighten the four 3/8 inch x 4 1/2 inch bolts, flat washers and M10 spring lock washers, securing the main gearbox housing to the scroll plate.

- i) Flip the gearbox upside down and place the drive end rotor, spacers and key onto the end of the crown gear shaft. When installing the drive end rotor make sure the follower arms are positioned so that they will follow the direction of rotation. Refer to the arrow marked earlier for direction of rotation.

- j) Take the drive rotor attachment bolt, flat washer, and spring lock washer and fasten the drive end rotor to the crown gear shaft.

- k) Secure the drive rotor attachment bolt to the drive end rotor with permanent locking compound and 18Ga wire.

- l) Remove the grease plug on the main gearbox cover. Fill with 14.4 Fluid Oz. (425ml or 0.112 U.S. gal) of NLGI Grade 000 extreme pressure, semi-fluid lithium grease, such as Mobilux EP 023, Petro-Can Precision XL EP000, or Chevron Dura-Lith EP000. See lubrication section for procedure.

- m) Install and tighten the grease plug on the gearbox cover.

SECTION 7 – SERVICE

- n) Reattach the scroll plate guard with the 1/4-inch x 1/2-inch bolts and washers.
- o) Install the gearbox unit back to the frame of the Rake-Up with the four 3/8 inch x 1 1/4 inch bolts, and M10 spring lock washers. Be sure that all finger bar drive arms are facing toward the opposite end of the machine, and that the drive belt shield is reattached.
- p) One by one attach the finger bars to the drive and idler arms using the 5/16-inch x 1-inch bolts, M8 spring lock washers and 3/8-inch fender washers. Be sure all surfaces of the threads are clean and degreased and apply Loctite® 603 liberally on both surfaces. Tighten all bolts installed through the finger bar holes. Finger tight all bolts installed through the finger bar slots.
- q) Reinstall the drive belt pulley. Be sure to install the key and tighten the setscrew.
- r) Rotate the finger bars by the drive pulley one revolution and tighten one set of the remaining four bolts to the finger bar.
- s) Repeat step (p) another five times completing the finger bar installation. This procedure will seat each finger bar in its proper position.
- t) Install the drive belt.
- u) Install the Drive Belt shield with the four 5/16 inch x 3/4-inch truss bolts.
- v) Disengage the hold down locks.

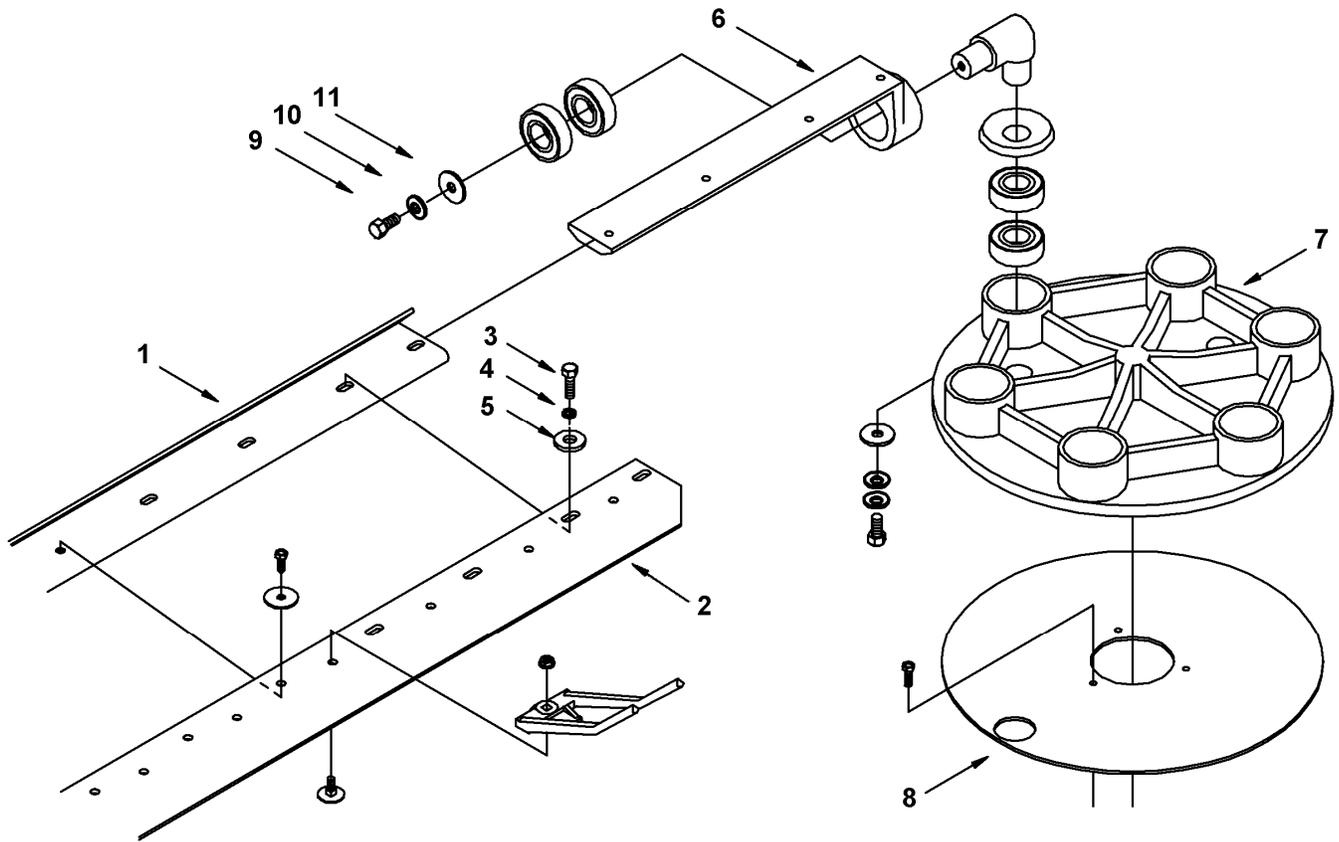
Crown Gear Bearing Installation:

- a) Press in the output spacer and two bearings into the crown gear housing. Apply pressure to outer ring. Pressure applied to the inner ring could damage the bearing.
- b) Install the outer snap ring into the crown gear shaft housing. Be sure that it is seated in the groove properly.

Pinion Gear Bearing Installation:

- a) Press on the two bearings and long input spacer onto the pinion shaft until the bearings bottom out. Apply pressure to the inner ring on the bearing. Applying pressure to the larger ring could damage the bearing.
- b) Install the External Snap Ring into the groove on the pinion gear.

7.13 FINGER BAR IDLER ARM REMOVAL/INSTALLATION (Rake-Up Models)



D00039A

- | | | |
|--------------------------|---------------------------|----------------------------|
| 1. Finger Bar | 5. 3/8 Washer | 9. 3/8x3/4 Bolt |
| 2. Finger Bar Belt | 6. Finger Bar Idler Arm | 10. M10 Spring Lock Washer |
| 3. 5/16 x 1 Bolt | 7. Idler End Rotor | 11. 3/8 Flat Washer |
| 4. M8 Spring Lock Washer | 8. Idler Rotor Seal Plate | |



WARNING: Always use heat protective gloves to prevent burning your hands when handling hot materials. Remove all combustible materials from the vicinity of an open flame. Have a fire extinguisher nearby.

Special Tools Required:

- *Torch*

SECTION 7 – SERVICE

Use the following procedure to remove and replace finger bar arms and elbows:

- a) Raise the hold down up and engage the hold down locks.
- b) Lower header/pickup completely to ground, shut of combine, and remove key.
- c) For drive side finger bar arm removal and installation refer to Replacing Small Gear Box (p &q).
- d) To remove idler arm, remove the 3/8 UNC x 3/4 bolts, flat washers, and M10 spring lock washers securing the idler arm to the elbow and the 3/8 UNC x 3/4 bolt and washer securing the elbow to the idler rotor, turn bolts out several turns.
- e) Remove the 5/16-inch x 1-inch bolts, flat washers, and M8 spring lock washers.
- f) Insert the 3/8 UNC x 3/4 bolt without washer onto the elbow from inner side of the idler rotor. Turn in several turns. Strike the bolt head with the hammer to drive elbow and idler arm out of the idler rotor.
- g) Inspect elbow bearing for free and smooth rotation. Inspect bearing seal for damage.
- h) To remove bearings heat the idler rotor-bearing socket until a yellow flame appears. Drive the bearing out.
- i) Insert the 3/8 UNC x 3/4 bolt without washers onto the elbow on the idler arm side. Turn in several turns. Strike the bolt head with the hammer to drive the elbow out of the idler arm. Inspect the bearings for free and smooth rotation. Inspect bearings for any signs of damage. Remove all foreign materials and degrease outer bearing rings and inside idler rotor bearings.

Installation Procedure

- a) Apply a thin coat of permanent thread locking compound to the outer bearing ring. Press the bearing into the idler rotor nest. Repeat procedure for the second bearing. Install the dust cup and elbow. Secure with 3/8 UNC x 3/4 bolt (Use temporary thread locking compound). Check elbow for free and smooth rotation.
- b) Clean the idler arm-bearing socket of foreign materials and grease. Press bearings into idler arm bearing socket.
- c) Install idler arm and secure with 3/8 UNC x 3/4-inch bolt, washer and M10 spring lock washer (Use temporary thread locking compound). Check arm for free and smooth rotation
- d) Reinstall the finger bar. For finger bar installation procedure, see Crown and Pinion Gear Installation Procedure.

7.14 EXTREMITY LIGHT BULB REPLACEMENT



DANGER: Lower header to the ground or engage feeder house locks, shut-off combine, remove ignition key, and wait for parts to stop moving before performing any service procedure.

The extremity lights are an important safety feature and should be maintained properly. When a bulb burns out it should be replaced immediately. The following procedure will describe the proper replacement procedure:

Replacement Bulb

12V-21W SINGLE FILAMENT

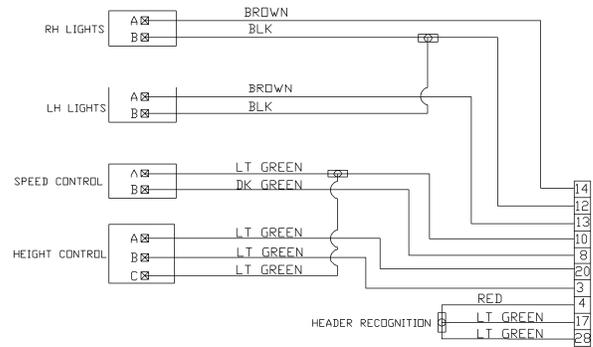
SECTION 7 – SERVICE

- a) Pry off the lens of the extremity light with screwdriver.
- b) Push in and turn the bulb counterclockwise until it turns in its socket. Remove bulb.
- c) Replace bulb and lens.



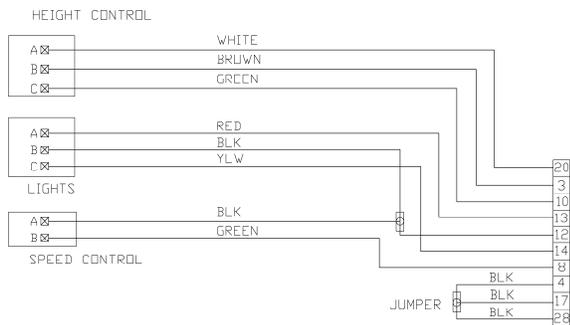
P00087

Bulb Replacement



JOHN DEERE D00500
60 Series Wiring Harness Adapter

7.15 HEADER WIRING SCHEMATICS



⊞ - BREAKOUT OR JUNCTION
□ - PIN TERMINAL
⊞ - SOCKET TERMINAL

JOHN DEERE D00198A
50 Series Wiring Harness Adapter

7.16 BELT GUIDES (SwathMaster Small Seed)

The SwathMaster Small Seed pickups are equipped with plastic belt guides to prevent belt wear and supply support.

The belt guides are designed to be turned around once worn down. When both sides are worn, they need to be replaced.



P00698

Belt Guides

SECTION 8

TROUBLE SHOOTING

CONDITION	POSSIBLE CAUSE	CORRECTION
Material overshoots the table auger.	<ol style="list-style-type: none"> 1.Pickup is running too fast. 2.Incorrect header height. 3.Improperly adjusted fiberglass rods. 	<ol style="list-style-type: none"> 1.Slow the pickup down until it is just pushing the swath. 2.Adjust header height to 14" as measured from the center of the rear draper roller to the ground (See Operating Height). 3.Adjust the orientation of the rod tube so that the tips of the rods are close enough to the draper belts to prevent overshoot (See Hold down Positioning).
Swath forms a ball and rolls to the right or left where it is eventually lost off the end of the pickup.	<ol style="list-style-type: none"> 1.Pickup is running too fast. 2.Improperly adjusted spring wire hold down. 	<ol style="list-style-type: none"> 1.Slow the pickup down until it is just pushing the swath. 2.Lower the spring wires closer to the pickup teeth and the ground. The adjustment is shown in Hold down Positioning.
Shelling in delicate crops.	<ol style="list-style-type: none"> 1.Pickup is running too fast. 2.Improperly adjusted hold down. 	<ol style="list-style-type: none"> 1.Slow the pickup down until it is just pushing the swath. 2.Raise the hold down assembly high enough to clear the swath. The spring wires should be turned up so they do not touch the swath.
Pickup leaves material in the field.	<ol style="list-style-type: none"> 1.Pickup teeth are set too high. 2.Pickup is running too slow. 3.Header height is too low. 	<ol style="list-style-type: none"> 1.Lower the tooth height as explained in Tooth Height Adjustment. The teeth should be set to just scratch the soil. In difficult picking conditions, the teeth should be set lower. 2.Increase pickup speed. 3.Adjust header height to 14" as measured from the center of the rear draper roller to the ground (See Operating Height).

SECTION 8 – TROUBLE SHOOTING

(CONT'D)

CONDITION	POSSIBLE CAUSE	CORRECTION
Pickup leaves material in the field. (cont'd)	<p>4.Pickup suspension is too light.</p> <p>5.Improperly adjusted spring wire hold down.</p> <p>6.Pickup is running too fast. (pulling apart swath)</p>	<p>4.Adjust the suspension assembly so that little or no force is required to lift pickup wheels off the ground. (when the center of the rear roller is 20 inches off the ground)</p> <p>5.Lower the spring wires closer to the pickup teeth and the ground. This adjustment is shown in Hold down Positioning.</p> <p>6.Slow the pickup down until it is just pushing the swath.</p>
The pickup is picking a large amount of dirt and stones.	<p>1.Pickup is running too fast.</p> <p>2.Pickup teeth are set too low.</p>	<p>1.Slow the pickup down until it is just pushing the swath.</p> <p>2.Raise the tooth height as explained in Tooth Height Adjustment. A 1/2" spacing between the tips of the teeth and the shop floor is a good guideline.</p>
Material stalls on the header before the auger can pull it into the feeder housing.	<p>1.Rough header table surface.</p> <p>2.Improperly adjusted header height.</p> <p>3.Improper pickup mounting.</p>	<p>1.Polish the header table surface. Use emery cloth or buffing wheel if necessary</p> <p>2.Adjust header height to 14" as measured from the center of the rear draper roller to the ground. If the header is too low, the table surface will be flat, causing the material to collect on the table.</p> <p>3.Ensure the pickup is mounted correctly (See Attaching Pickup to Header).</p>

SECTION 8 – TROUBLE SHOOTING

(CONT'D)

CONDITION	POSSIBLE CAUSE	CORRECTION
Material stalls on the header before the auger can pull it into the feeder housing. (cont'd)	4.Improperly adjusted header tilt.	4.On some combine headers header angle can be adjusted. Adjust so that when the header is at the operating height the header and floor are parallel. (Note: Adjust header tilt to Corn Setting from Grain Setting)
Draper belts roll over the dividers on the front draper roller.	1.Belts are too tight. 2.Belts are tightened unevenly. 3.Dirt/crop buildup on rollers. 4.Belts are sometimes tacky when new	1.Loosen draper belt tension (See Draper Belt Tensioning). 2.Adjust draper belt tension evenly on both ends of the pickup (See Draper Belt Tensioning). 3.Remove draper belts and remove dirt/crop buildup from roller surface. 4.Rub talcum or baby powder onto belts to reduce tackiness. Also, belts may need to be run loose for first few hours of break-in.
Stalling of center belts when loaded with crop material.	1.Draper belts are too tight	1.Relax belt tension (See Draper Belt Tensioning).
Master Lags behind Slave on decent and ahead of slave on lift	1. Obstruction preventing cylinder movement. 2. Flow is too restricted	See Hydraulic System in Service section.
Hydraulic hold down will not lower.	1.Safety Lock is engaged 2.Hydraulics not connected properly. 3. Hold down arm bushing seized or sticking	1.Disengage Safety Lock as described in Safety During Servicing. 2.Ensure hydraulic lines are connected properly and not damaged. 3.Lubricate bushings (disassemble and clean if necessary).

SECTION 8 – TROUBLE SHOOTING

(CONT'D)

CONDITION	POSSIBLE CAUSE	CORRECTION
Driveshaft clutch is slipping.	<ol style="list-style-type: none"> 1. Clutch is worn. 2. Obstruction in auger. 	<ol style="list-style-type: none"> 1.Rebuild/Replace clutch 2. Shut off combine, remove key and remove obstruction.
Pickup wheels bounce over bumps.	<ol style="list-style-type: none"> 1. Header height is too great. 2. Suspension springs are adjusted to great. 	<ol style="list-style-type: none"> 1. Lower header until rear pickup shaft is 14” (356mm) above the ground See Operating Height. 2.Loosen the springs 1/2” (13mm) and recheck.
Pickup bounces excessively in transport.	<ol style="list-style-type: none"> 1.Lifter adjust bolt is out of adjustment. 2. Severely rough road 	<ol style="list-style-type: none"> 1. Adjust clearance as per Section 4.3. 2.Reduce speed or Install pickup storage braces during transport.
SwathMaster v-belt misalignment.	<ol style="list-style-type: none"> 1. Rollers not centered on pick up. 2. Rear sheave not aligned. 3. No spacer between belt tension arm and pulley. 	<ol style="list-style-type: none"> 1. Center the rollers. 2. Align sheaves. 3. Install spacer.
Speed control not working properly.	Sensor positioned incorrectly.	See Speed Control Adjustment in Adjustments Section.

SECTION 9 SPECIFICATIONS

9.1 TORQUE CHART

SAE FASTENER TORQUE CHART

NOTE: Use these torques, unless special torques are specified. Values are for UNC and UNF thread fasteners, plated or unplated, as received from supplier. Fasteners can be dry or lubricated with normal engine oil. Values do not apply if graphite, moly-disulphide or other extreme pressure lubricant is used.

SAE Grade No.	2				5				8*			
Bolt Head Identification (See Note 1)					  				  			
Bolt Size	LB FT		Nm		LB FT		Nm		LB FT		Nm	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4	5	6	7	8	9	11	12	15	12	15	16	20
5/16	10	12	14	16	17	20.5	23	28	24	29	33	39
3/8	20	23	27	31	35	42	48	57	45	54	61	73
7/16	30	35	41	47	54	64	73	87	70	84	95	114
1/2	45	52	61	70	80	96	109	130	110	132	149	179
9/16	65	75	88	102	110	132	149	179	160	192	217	260
5/8	95	105	129	142	150	180	203	244	220	264	298	358
3/4	150	185	203	251	270	324	366	439	380	456	515	618
7/8	160	200	217	271	400	480	542	651	600	720	814	976
1	250	300	339	406	580	696	787	944	900	1080	1220	1464
1-1/8					800	880	1085	1193	1280	1440	1736	1953
1-1/4					1120	1240	1519	1681	1820	2000	2468	2712
1-3/8					1460	1680	1980	2278	2380	2720	3227	3688
1-1/2					1940	2200	2631	2983	3160	3560	4285	4827

NOTE 1: Bolt head identification marks as per grade. Manufacturing marks will vary. *Thick nuts must be used with grade 8 bolts.

METRIC FASTENER (ISO) TORQUE CHART

NOTE: Use these torques, unless special torques are specified. Values are for coarse thread fasteners, plated or unplated, as received from supplier. Fasteners can be dry or lubricated with normal engine oil. Values do not apply if graphite, moly-disulphide or other extreme pressure lubricant is used.

ISO Class No.	8.8				10.9				12.9			
Bolt Head Identification (See Note 1)												
Bolt Size	Nm		LB FT		Nm		LB FT		Nm		LB FT	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
M4	3	4	2	3	4	5	3	4				
M5	6.5	8	5	6	9.5	11	7	8				
M6	10.5	12	8	9	15	17.5	11	13				
M8	26	31	19	23	37	43	27	32				
M10	52	61	38	45	73	87	54	64				
M12	90	107	66	79	125	150	93	112				
*M14	144	172	106	127	200	245	149	179				
M16	217	271	160	200	310	380	230	280				
M20	434	515	320	380	610	730	450	540				
M24	675	815	500	600	1050	1275	780	940				
M30	1250	1500	920	1100	2000	2400	1470	1770				
M36	2175	2600	1600	1950	3500	4200	2580	3090				

Because of the low ductility of these fasteners, the torque range is to be determined individually for each application. As a general rule, the torque ranges specified for grade 10.9 fasteners can be used satisfactorily on 12.9 fasteners.

*M14 is not a preferred size

NOTE: Bolt head identification marks as per grade. Manufacturing marks will vary.

SECTION 9 – SPECIFICATIONS

9.2 GENERAL SPECIFICATIONS

HEADER

Overall Width (w/o Extremity Lights) – 13’ header	4145mm (13.6ft)
Overall Width (w Extremity Lights) – 13’ header	5390mm (14.4ft)
Overall Width (w/o Extremity Lights) – 15’ header	4750mm (15.6ft)
Overall Width (w Extremity Lights) – 15’ header	5000mm (16.4ft)
Approx. Weight – 13’ header	720 kg (1584 lbs)
Approx. Weight – 15’ header	795 kg (1750 lbs)

AUGER

Pitch	560mm ±25
Outside Diameter	Ø610mm (24’')
Tube Diameter	Ø412mm (16’')
Speed STD	170 RPM nominal
Retractable Finger Diameter	16mm (5/8’')

PICKUP

Belt Width (Conventional)	476mm (18-3/4’')
Belt Width (SwathMaster Small Seed)	3404mm (134’)
Tire Pressure (Gauge Wheel)	55-69 kpa (8-10PSI)
Tire Size	20.5 – 8-10 Load Range C
Rake-Up Approx. Weight (w/o header)	
12’ Small Seed	575 kg (1264 lbs)
14’	615 kg (1352 lbs)
16’	655 kg (1440 lbs)
Rake-Up Overall Width	
12’	4512mm (177 5/8’')
14’	4994mm (196 5/8’')
16’	5477mm (215 5/8’')
SwathMaster Approx. Weight (w/o header)	
12’ Small Seed	638 kg (1404 lbs)
14’	687 kg (1512 lbs)
16’	736 kg (1620 lbs)
SwathMaster Overall Width	
12’	4512mm (177 5/8’')
14’	4994mm (196 5/8’')
16’	5476mm (215 5/8’')

NUMBER OF DRAPER BELTS (For SwathMaster x 2 for Front & Rear Belts)

12ft	7	16ft	9
14ft	8	12ft Small Seed	1

TEETH (Standard – Plastic, Optional – Steel)	RAKE-UP	SWATHMASTER	SWATHMASTER (Small Seed)
Number on 12ft	168	N/A	300
Number on 14ft	192	322	N/A
Number on 16ft	216	364	N/A

SECTION 10 - STORAGE

10.1 STORAGE OF HEADER/PICKUP

After all fieldwork is completed for the season and the header/pickup is ready for storage there are a number of maintenance procedures to perform. Properly maintaining your equipment will provide years of a trouble free product.

Always store your equipment in dry and protected place. Leaving equipment unprotected will shorten the service life of header and pickup.

ATTENTION: If storing the header and pickup on the combine during the off season, be sure to lower it to the ground thus relieving pressure in the hydraulic system. A loaded hydraulic system can cause damage to the cylinders.



WARNING: DO NOT begin to service the unit unless combine is shut off, the key is removed and all moving parts have stopped.

The following are procedures that are to be performed before storage:

- Clean entire unit with compressed air or pressure washer. Be sure to ALWAYS use the necessary protective equipment and keep unnecessary people or pets away during servicing.

NOTE: Avoid spraying high-pressure water/steam or cleaning solvents on bearings or seals.

- Paint any worn out areas. This will prevent excessive corrosion.
- Check frame for any signs of structural problems.

- Replace all missing hardware and check torque of hardware.
- Perform daily, weekly, and yearly lubrication and maintenance procedures.
- Apply a light coat of grease to all cylinder shafts to prevent rust.
- Install storage braces before removal from combine. This may allow for easier hookup next season.
- Store inside or cover up with tarp to extend component life.

10.2 REMOVING FROM STORAGE

- Perform procedures listed under daily and weekly lubrication and maintenance.
- Inspect header/pickup to ensure all components are ready for the field. Check the frame for any signs of structural problems. Check all bearings for signs of seal damage or excessive wear.
- Run unit at a low speed for several minutes while have the unit checked over. Check for proper operation of all drives, overheating of bearings and excessive looseness or noise.
- Check alignment and tension of all belts and chains.
- Remove storage braces after attaching to combine.
- Look over Operators Manual familiarizing yours self with all safety and operational procedures.
- Set header stands to field position.

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